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ADOLESCENT SUBSTANCE USE: PERCEPTIONS OF PARENTS AND TEENAGERS.

By

Anthony G. Stadtherr

A THESIS SUBMITTED

IN PARTIAL FULFILLMENT

OF THE REQUIREMENT FOR THE DEGREE

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ADOLESCENT SUBSTANCE USE: PERCEPTIONS OF PARENTS AND
TEENAGERS.

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This thesis has been examined and approved by the following members of the thesis committee.

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Abstract

ADOLESCENT SUBSTANCE USE: PERCEPTIONS OF PARENTS AND TEENAGERS

Drug use among Minnesota youth is a leading health risk behavior. The purpose of this study was to examine rural adolescents' and parents'/guardians' perceptions of teens' substance use. An electronic survey was administered to high school students ($n = 62$; adjusted response rate = 98.4%) and sent by email to 79 parents/guardians ($n = 22$; response rate = 27.8%). Analyses included descriptive statistics, independent and paired sample t-tests, and chi-square. A majority (56.5%) of teens reported using alcohol in the past 12 months whereas 12.9% reported using marijuana. During the past 30 days teens reported using alcohol 1.1 days and using marijuana 1.2 days. When teenage participants did drink, they reported having 3.4 drinks on average. Teens estimated that 22.9% of close friends and 45.3% of peers used alcohol and 10.7% of close friends and 23.6% of peers used marijuana during the past 30 day. A significant difference between teenagers' and parents' perceptions of social norms related to substance use was identified. Differences in parental perceptions of alcohol use and reported teen alcohol use were found. Parents' perceptions were confirmed true related to teenage marijuana use as no significant difference was found. Significant differences were found between student's perceptions of social norms and the substance use behaviors of teenagers. A significant difference was found between parents' perceptions of social norms related to substance use of their own child and the reported substance use behaviors of teenagers. Finally, a significant difference was found between teenagers' perceptions of social norms related to substance use among their close friends and their perceptions of social norms related to use among peers.

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Chapter 1: Statement of Problem

Introduction

Although there have been many significant achievements in drug abuse prevention over the past few decades, drug use among American youth continues to be a leading health risk (Peterson, 2010). Alcohol, tobacco, and other drug use have had an extraordinary impact on morbidity and mortality of youth. The cost of negative outcomes attributed to adolescent drug use affects nearly half a million individuals annually (Peterson, 2010). Economic costs of the use of alcohol tobacco and other drugs by youth were estimated to reach \$484 billion in 2004 (Centers for Disease Control and Prevention [CDC], 2004). Given the negative quality of life outcomes and financial cost of adolescent substance use, this study will attempt to see if there is a “disconnect” between parents and adolescents perceptions of norms, regarding adolescent alcohol and marijuana use.

Statement of the Problem

The purpose of the study was to compare and contrast the perceptions of substance use by parents and teenagers. In an attempt to examine perception of norms related to substance use, current adolescent substance use, adolescents’ perception of peer substance use, and parental perceptions of adolescent substance use were examined in this study. Gaining a better understanding of perceptions of norms related to substance use among adolescents will allow health educators to take the necessary steps to educate

parents and adolescents on actual social norms pertaining to substance use. Decreasing the perception of social norms related to substance use by teenagers will lower the overall substance use behavior of teenagers (Perkins, 2003).

Significance of the Problem

The use of alcohol, tobacco, and other drugs is common among American youth and may be perceived as a rite of passage to adulthood. Substance use by teenagers is a prevalent health concern in the United States (Peterson, 2010). Youth continue to initiate substance use at younger ages (CDC, 2009). By the ninth grade 38% of youth have tried cigarettes and nearly 20% have become a regular smoker (CDC, 2009). Nationwide, 24% of students (9-12 grade) have reported having five or more drinks in a row (binge drinking) and 46% of twelfth grade student report having used marijuana in their lifetime (CDC, 2009). Adolescents initiating early use of substances such as alcohol, tobacco, and illicit drugs have a greater risk for later substance abuse (Peterson, 2010).

In many ways there seems to be a “disconnect” between teens and adults in our society. Family meals and face to face communication have been replaced by fast food and technology Teenagers are spending more time with friends, afterschool activities, computers, video games, and other technologies. Parents are also busier today in our society which puts such an emphasis on working harder and longer hours. With all this time spent apart parent-child communication has dwindled. Parents spend less time monitoring and use less effective methods of monitoring (Macaulay, Griffin, Gronewold, Willians, & Botivin, 2005). This lack of time spent together combined with lack of

communication has a major impact on parents ability to monitor their child and remain aware of possible risk behaviors their child may be involved in. Parents who more closely monitor their child, rest rules, and communicate disapproval have children who are less likely to engage in alcohol use or disapproved conduct. (O'Donnell et al., 2008).

Lack of monitoring or poor parental monitoring has been found to be associated with higher rates of substance use, particularly in terms of early initiation of use. Poor parent-child communication along with poor parental knowledge is frequently associated with greater youth substance use. Infrequent communication between parent and child and fewer hours of time spent together have been found to be associated with higher rates of alcohol and tobacco use onset in middle school students (Macaulay et al., 2005). Substance use tends to decrease with an increase in parental knowledge, indicating that adolescents may perceive parental knowledge as a sign of involvement and a positive parent-child relationship (Padilla-Walker, Nelson, Madsen, & McNamara Barry, 2008).

The construct of social norms compares perceptions of peers' behavior with their peers' actual behavior (Perkins, 2003). Norms refer to beliefs or expectations of individuals or groups based on various circumstances (Perkins, 2003). Social norms influence teenagers decisions especially when considering social norms of influential others (Perkins, Meilman, Leichliter, Cashin, & Presley, 1999). For example, if peers that are deemed to be popular are perceived to be using substances other teens will have the perception that many popular teens are using. As a result substance use may increase in that population because peers tend to be the most influential figures in a child's life by mid to late adolescence, especially with regards to substance use (Perkins, 2003).

Most adolescents' perceptions of their peer's engagement in health risk behaviors is higher than their peers actual engagement in the behaviors (Perkins, 2003). This is most likely the result of a lack of information to make an accurate estimation (Perkins, 2003). For example, when students observe a person in an intoxicated state they tend to associate that to the person's normal lifestyle. Adding to this, a person under the influence may behave in a memorable way whether it be by being entertaining, vomiting, or overreacting to an event (sad or mad). This, in turn, will probably be talked about more frequently than normal behavior making it seem like the norm. People tend to retain what is most memorable and give it disproportionate weight in estimations of what is normal (Perkins et al., 1999). As a teenager's perception of substance use behavior increases so can that individual's actual substance use behavior. Teens often act in accordance to what they perceive as the norm, which can lead to an increase in substance use (Perkins, 2003).

When it comes to parental perception of norms it's interesting that many parents are unwilling to accept the truth about their own child's actions (Beck, Scaffa, Swift, & Ko, 1995; Beck & Treiman, 1996). Beck and colleagues found that parents are much more likely to believe that their children's peers drink than they are that their own child would. Only a small percentage believed that their child had ever come home intoxicated even after admitting to being at a party with alcohol (Beck, Shattuck, Haynie, Crump, & Simons-Morton, 1999). Parents need to become more honest and aware of their child's substance use behavior. Lack of awareness of substance use is a major problem considering parents often take on the role of deterring use and identifying the need for

treatment (Williams, McDermitt, Bertrand, & Davis, 2003). In this study parents and teenagers perceptions of substance abuse will be compared with actual teen substance use behavior.

Research Questions

1. What are parents' perceptions of the social norms related to substance use in teenagers?
2. What are teenagers' perceptions of the social norms related to substance use in teenagers?
3. What are the substance use behaviors of teenagers?
4. Is there a difference between parents' and teenagers' perceptions of social norms related to substance use?
5. Is there a difference between parents' perceptions of social norms related to substance use among teenagers and the substance use behaviors of teenagers?
6. Is there a difference between student's perceptions of social norms and the substance use behaviors of teenagers?
7. Is there a difference between parents' perceptions of social norms related to substance use of their own child and the substance use behaviors of teenagers?

8. Is there a difference between teenagers' perceptions of social norms related to substance use among their close friends and their perceptions of social norms related to substance use among peers?
9. Is there a difference between parents' perceptions of social norms related to substance use of their own child and their perceptions of social norms related to substance use of their child's peers?

Limitations

Limitations presented in this study include the following:

1. Use of electronic survey (which may affect response rates).
2. The results were based on self-reported responses and could have included participant dishonesty.
3. Participants in this study were recruited using purposive, rather than random sampling, therefore, these findings may or may not be representative of the larger population.

Delimitations

Delimitations presented in this study include the following:

1. Participants were not randomly selected and represented only two tenth grade classes from Lake Crystal Wellcome Memorial School District and their parents.

2. Lake Crystal Wellcome Memorial School District is a rural community with a lack of diversity. The majority of the communities inhabitants have similar backgrounds

Assumptions

Assumptions of this study include the following:

1. It was assumed that all participants could read and understand the survey instrument and that they responded in an open and honest manner.
2. The sample was large enough to yield statistical power to make conclusions regarding the results.

Definition of Terms

For the purpose of this study a variety of terms were used. These terms are defined in the following paragraphs.

Descriptive norm. “Belief about whether most people perform the behavior” (Montano & Kasprzyk, 2008, p. 74).

Minnesota Student Survey. The Minnesota Student Survey (MSS) is used by school district leaders and educators, local public health agencies and state, community and social services agencies to plan and evaluate school and community initiatives and prevention programming. It is administered every three years to sixth, ninth, and twelfth grade students and also is offered to students in area learning centers and to youth in

juvenile correctional facilities. It contains questions related to both risk and protective factors. Participation in the survey is voluntary, confidential and anonymous (Minnesota Department of Education, 2011).

Norms. Norms refer to beliefs or expectations of individuals or groups based on various circumstances (Perkins, 2003).

Social Norms Construct. Social Norms construct attempts to communicate the truth about peer norms in terms of what is actually happening regarding a given behavior instead of what is perceived to be happening (Perkins, 2003).

Chapter 2: Review of Literature

Introduction

The purpose of this study is to gain a better understanding of adolescent and parent perceptions of substance use. This chapter will include a review of the following topics: The Social Norms construct with respect to adolescents' perceptions of norms related to substance use, parental perceptions of substance abuse, parental monitoring and parental knowledge of adolescents' behavior and whereabouts; and discrepancies between parental perceptions and adolescent reports.

Social Norms Construct

“Norms are fundamental to understanding of social order as well as variation in human behavior” (Perkins, 2003), p. 164). Norms refer to beliefs or expectations of individuals or groups based on various circumstances (Perkins, 2003). Norms can influence decisions especially when considering norms of influential others. Peers tend to be the most influential figures in a child's life by mid to late adolescence, particularly with regards to substance use (Perkins, 2003). The Social Norms construct attempts to communicate the truth about peer norms in terms of what is actually happening regarding a given behavior instead of what is perceived to be happening (Perkins, 2003).

Adolescents form their estimates of normal behavior through careful observation of close friends, comparisons with peers, and observations of what they hear and actually see (Unger & Rohrbach, 2002). Adolescents often use their own behavior to estimate

norms as evidence. For example, non-smokers tend to underestimate use whereas smokers tend to overestimate use (Unger & Rohrback, 2002).

The more substance use that takes place within a given adolescent group the more likely adolescents are to see and hear about it (Unger & Rohrback, 2002). The availability of any given substance also predicts perceived norm. If an adolescent infers that a substance is easily attainable then they are also likely to infer that peers can easily obtain and use said substance (Unger & Rohrback, 2002). Adolescents who are frequently offered substances by others typically assume that others have an equal amount of offers (Unger & Rohrback, 2002).

As humans, we are prone to error in over estimating behavior because observers often lack the information to make an accurate estimation. When students observe a person in an intoxicated state they tend to associate that to the person's typical behavior (Perkins, 2003). Adding to this, a person under the influence may behave in a memorable way such as being comic and entertaining, getting sick or vomiting, or overreacting to an event (sad or angry). This, in turn, will probably be talked about more frequently than less memorable behavior, thus, making it seem like the norm. People tend to retain what is most memorable and give it disproportionate weight in estimations of what is normal (Perkins, 2003).

Perception of others. Adolescents base their perception of norm on estimations of the behavior of their closest peers (Juvonen, Martino, Ellickson, & Longshore, 2007). Adolescents have the most conservative perception of alcohol use with themselves and their closest friends. Also, adolescents see their own substance use as much more

moderate than their peers. They see good friends and others at their school as more permissive in terms of alcohol use. This possibly guards them against being associated with negative and disapproved behavior (Agostinelli, Grube, & Morgan, 2003). “One may distance oneself from negative self implication by judging others’ drinking behaviors as more extreme. One’s own level of drinking can than appear more moderate and justifiable” (Agostinelli et al., 2003, p. 2355)

Increased use because of perceived norms. Higher perceptions of normal behavior can attribute to increased substance abuse in a group of students (D’Amico & McCarthy, 2006; Perkins et al., 1999). Substance use can increase as individuals act in accordance to what they perceive as the norm, producing a self-fulfilling prophecy and a vicious cycle of misunderstanding and substance use (Perkins, 2003).

Heavy use of alcohol can lead to events that may be more easily recalled than events involving the abstinence of alcohol. Therefore, these events of high use receive more attention and contribute to the perception of increased use (Perkins et al., 1999). Misperceptions of normal behavior can lead to serious consequences including an increase in substance use. Making matters worse, adolescents perceive that most of their peers are using, because of all the stories they hear, whereas very few face serious harm in these stories (Lintonen & Konu, 2004).

Perception of norm plays a major role in initiation of substance use in middle school. According to D’Amico and McCarthy (2006), adolescents who perceive the majority of their friends to be using substances will most likely initiate use during the

academic year. Because adolescents often feel pressure to conform to whatever is considered normal behavior within their peer groups, this distortion of norms by peers can actually lead to increased substance use (Unger & Rohrback, 2002).

Perceived norms predictions. Perceived substance use among peers typically predicts subsequent substance use by individuals (Juvonen et al., 2007). Beck and Treiman (1996) suggest that adolescent drinking patterns have more to do with perceived norms than a need to be accepted. In fact, their research found that perceived norms in drinking are better predictors of adolescent alcohol use than age or parent and peer approval. Perceived norms of friends drinking frequency, quantity, and intoxication level has been found to be associated with binge drinking and negative consequences (Beck & Treiman, 1996).

Social norms research. Perkins and Berkowitz (1986) found that more than three quarters of adolescents felt that intoxication is unacceptable yet almost two thirds believe that their peers believed differently. Many subsequent researchers (D'Amico & McCarthy, 2006; Reid, Manske, & Leatherdale, 2008) have found similar misperceptions related to social norms.

D'Amico and McCarthy (2006) surveyed sixth through eighth grade students about their perceptions of norms as well as their actual behavior related to substance use. Of students surveyed, 11% had ever smoked a cigarette, 18% had consumed alcohol, and four percent had used marijuana. However, students' perceptions of norm were nearly

double, coming in at 17% for cigarette use, 29% for alcohol use, and 18% for marijuana use respectively.

Overestimation is another common finding in Social Norms research. Reid and associates (2008) found that over 80% of students in grades nine through 12 overestimated tobacco use amongst peers. The study also found that perception of norm was a greater indicator of smoking behavior than actual use. Overestimation was associated with a number of factors such as age, cigarette use of friends, and seeing peers smoke at school (Reid et al., 2008). Adolescents with a greater number of close friends who smoke were more likely to overestimate smoking norms. In essence, the more peers' one has who smoke the more likely one is to believe smoking is normal behavior (Reid et al., 2008).

Parental Perceptions of Adolescent Substance Use

Parents frequently underestimate their children's involvement in health risk behaviors, especially as related to substance use (Haynie, Beck, Crump, Shattuck, & Simons-Morton, 1999; Miller & Plant, 2010; Williams, McDermitt, Bertrand, & Davis, 2003). In a survey by O'Donnell and colleagues (2008), during a two year period, more than 700 sixth-grade girls and their parents were surveyed. The sample was recruited from seven public schools in New York City serving economically disadvantaged African American and Latino families. Over 700 girls and their parents participated in the study. About 22% of girls reported using alcohol one or more times and approximately eight percent reported being drunk once or more. However, less than one

percent of parents thought their child had used alcohol (O'Donnell et al., 2008).

Similarly, adolescent reports were dramatically higher than parent perceptions of their children staying out late, attending unsupervised parties, going to places where alcohol was served, and drinking while going out (Haynie et al., 1999). The differences between reality and parent perception consistently points to parent underestimation of substance use (Hermida, Villa, Seco, & Perez, 2003).

Hermida and associates (2003) found that parents are much more likely to underestimate than overestimate their child's substance use. In this study, almost 42% of parents underestimated their child's use of tobacco while less than three percent overestimated. Similarly for alcohol use, 37% of parent's underestimated their child's use while only three percent overestimated their child's use. When they analyzed only students who report alcohol use underestimation rises to 96% with no overestimates.

Adolescent age. Parents of younger teens seem to be much more unaware of their adolescent's substance use and activities surrounding use (Beck et al., 1999). Parents of preteens underestimate their child's substance use more than parents of older teenagers (De Haan & Thompson, 2003). Masche (2010) found parental knowledge of adolescents' spare time activities was found to decrease by one tenth of a standard deviation each year. Masche found that this increase in independence was the single most important explanation of age related declines in parental knowledge. Similarly, O'Donnell and colleagues (2008) found that early alcohol use is relatively overlooked and few parents in that sample believed that their child might have had a drink. Greater

parental awareness occurred with older teenagers and in households that communicated more frequently (Williams et al., 2003).

Parental denial. Not only are parents unaware of their child's drinking they also seem to be in denial about their child's drinking and unwilling to accept the truth about their child's actions (Beck et al., 1995; Beck & Treiman, 1996). Parents of teens are more than three times more likely to believe that their child's friends engage in substance use behaviors than they were to believe their own child engaged in these behaviors (Beck et al., 1995). Research has shown that parents are much more likely to believe that their children's peers drink and drive than they are that their own child would drink and drive. The same survey reported that only a small percentage believed that their child had ever come home intoxicated even after admitting to being at a party with alcohol (Beck et al., 1999).

Parents of adolescents that use. Parents of children who use drugs tend to overestimate the accessibility to drugs, whereas parents of children who don't use drugs tend to underestimate accessibility. It appears that parents of drug users have more knowledge about substance use and a better understanding of drugs in society (Hermida et al., 2003). Conversely, parents of adolescents who are above average students and attended religious services were more likely to underestimate substance abuse (Yang et al., 2006).

Parenting Practices

A number of different parenting practices may have an effect on parental knowledge of their child's substance use behavior.

Parental knowledge. Parental knowledge about their child's life is a common indicator for many positive outcomes. Parent's ability to attain knowledge about their child is linked to fewer negative behaviors such as substance use, delinquency, and depression (Padilla-Walker, Nelson, Madsen, & Barry, 2008; Waizenhofer, Buchanan, & Jackson-Newsom, 2004). As noted previously, parental knowledge decreases as adolescents get older and become more involved in activities outside the house such as sports, clubs, and activities with friends. Increased monitoring tactics are an important parental practice in order to maintain knowledge of what is happening in an adolescent's life (Padilla-Walker et al., 2008).

Waizenhofer and associates (2004) found that substance use tends to decrease with an increase in parental knowledge about their child's life, indicating that adolescents may perceive parental knowledge as a sign of involvement and a positive parent-child relationship. Knowledge about their child's life seems to convey a message of affection and caring towards the child (Waizenhofer et al., 2004). It appears as though the more parents know about their child the less likely the child is to engage in risky behavior such as substance abuse (Padilla-Walker et al., 2008).

Parental monitoring. The discrepancies between adolescent reports and parent perceptions have been linked to parental monitoring. For example, in a study by Haynie and associates (1999) parents reported that they were highly reliant on what their teen

told them as a primary measure of monitoring instead of other means, such as getting to know their adolescent's friends and becoming more involved in their child's life. The perceived difficulty of communicating between parents and teens, as it relates to substance use, is associated directly with an increased risk of substance use (Luk, Farhat, Ianotti, & Simons-Morton, 2010).

One monitoring method that doesn't seem to be successful is controlling adolescents. Kerr and Stattin (2000) suggest that attempting to gain knowledge through controlling adolescents' freedom is a poor strategy. Perceived higher levels of parental control are linked to greater risk of internalizing behavior in teenagers which in turn can lead to substance use. Instead, parents should strive to be authoritative rather than authoritarian. Authoritative parents are vigilant, have high expectations, establish clear rules and consequences, and apply rules and consequences consistently (Kerr & Stattin, 2000). Research shows that authoritative parents decrease the likelihood of their child using substances (Haynie et al., 1999). Parents of students with better grades in school were more aware of their child's circumstances involving substance use. This is most likely the result of communication and the noticeable impact drug use has on grades (Williams et al., 2003).

Lack of parental knowledge and communication. Children of parents who aren't knowledgeable about their child are more likely to engage in risk behavior such as substance use. More parental knowledge seems to predict less risk behavior and likewise low levels of risk behavior also predicts higher levels of parental knowledge (Crouter,

Bumpus, Davis, & McHale, 2005; Crouter, Helms-Erickson, Updegraff, & McHale, 1999).

Poor parent-child communication along with poor parental knowledge is frequently associated with greater youth substance use. Infrequent communication between parent and child and fewer hours of time spent together have been found to be associated with higher rates of alcohol and tobacco use onset in middle school students (Macaulay et al., 2005).

Parental attitudes. Children of parents who have more permissive attitudes about substance use are more likely to use and use frequently during high school (Pettersson, Linden-Bostrom, & Eriksson, 2009). “Children who use substances, perceive their parents as more tolerant toward substance use” (Hermida et al., 2003, p. 347). Permissive parental attitudes and lack of awareness of substance use is a major problem considering parents often take on the role of deterring children’s use and identifying the need for treatment (Williams et al., 2003). O’Donnell and associates (2008) found several revealing trends in their study of parents and their daughters. Daughters of parents who underestimate risks, report there are fewer rules, less oversight and communication, and less disapproval of risk. Parents of daughters engaging in the most risky behaviors rated themselves more favorably on parenting practices. On the other hand, parents who more closely monitor their child, set rules, and communicate disapproval have children who are less likely to engage in substance use (O’Donnell et al., 2008).

Attaining parental knowledge. Parental knowledge is mainly based on what adolescents are willing to communicate to their parents (Kerr & Stattin, 2000; Lahey, Van Hulle, D'Onofrio, Rodgers, & Waldman, 2008). Adolescents whose parents who know more about their child's life when they are not at home are much less likely to be involved in risky behavior such as substance abuse (Lahey et al., 2008). Successful parents attempt to stay informed of their child's whereabouts, activities, and friends (Waizenhofer et al., 2004). Parents who talked to their children directly and attended their events were more knowledgeable about their child's life than parents who did not. Essentially, parents who are more immersed in their child's life are more knowledgeable about their child's daily experiences (Waizenhofer et al., 2004). "Well adjusted adolescents do not have to tell their parents where they are and what they are doing because their parents are physically there" (Kerr & Stattin, 2000, p. 366).

Parents and Adolescents: "The Disconnect"

Given the independence sought by most teens during adolescent development, it is not surprising that parents may not know what their adolescents are doing at each moment during the day (Cottrell et al., 2003). Stanton and associates (2000) studied parents' perceptions of youth risk behavior in comparison to youth reported rates of engagement in these risk behaviors. This study investigated ten risk behaviors ranging from substance use to violence to sexual activity. Youth reported higher rates of participation in all risk behaviors than parents reported perceptions for all ten risk

behaviors. The difference was statistically significant for six of the risk behaviors including staying out all night, trafficking drugs and use of alcohol among others.

Many parents seem to be unaware of their child's problems and concerns. Adolescents report substance use as their primary concern ahead of academic and social pressures. In contrast very few parents recognized substance use pressures as their child's number one concern (Lac, Alvaro, Crano, & Siegel, 2009). According to researchers from the National Center on Addiction and Substance Abuse (2010) the majority of adolescents ranked substance abuse to be their primary concern whereas only half as many parents viewed substances as their child's number one concern. Lac and associates (2008) notes that discrepancies such as this one point out parents' lack of knowledge about their children and the problems they are facing in their lives.

Along with parental misperceptions about the problems that are facing their children, parents also misperceive what their children view as effective ways to learn about substance use. Peterson (2010) found students and their parents disagreed on the effectiveness of alcohol, tobacco, and other drugs prevention programs in the school. Students found these programs in general to be ineffective, infrequent, boring, outdated, and irrelevant. Parents, on the other hand, believed that school sponsored programs were "helpful".

Adolescents also felt as though they received mixed messages about substance use from their family and schools. Adolescents argued that families are inconsistent with substance use. For example, the use of alcohol by youth seemed to be more permissible during holidays and family gatherings. Similarly, most participants wanted parents to be

strong role models who establish consistent behavior expectations with substance use instead of acting like friends. Adolescents felt as though parents should not allow the use of alcohol at home because it portrays a permissive attitude about substance use. Parents, in contrast, were mainly concerned about peer pressure to use substances and expressed little concern over their own roles in preventing substance use (Peterson, 2010).

Cottrell and his colleagues (2003) found that parents claimed to be aware of their adolescent's activities and whereabouts, about 80% of the time, afterschool, at night, and during spare time. In contrast, their children reported that parents were aware of their activities and whereabouts about half of the time (Cottrell et al., 2003). Also, according to adolescents, parents frequently didn't know with whom their child was spending time (Cottrell et al., 2003).

Wong and associates (2005) found the "the disconnect" seems to be a problem across cultures. For example, in Hong Kong where parent-child relationships are different and substance use is much more infrequent, children and adults were in disagreement. Most teachers (77%) and parents (90%) assumed children had not used substances of any sort and would continue to abstain in the future (Wong et al., 2005).

Peterson (2010) found that many teens in his study reported getting alcohol, tobacco, and other drugs from family members and parents. Use often took place in the parents' own home. Parents, however, expressed concern that "other parents" allow use in their homes. Peterson (2010) noted that parents and adolescents are in disagreement when it comes to the effectiveness of punishment. Adolescents expressed fear of

punishments from parents as a major deterrent to substance use. Parents believed that youth felt fearless and invincible and did not fear negative consequences.

Parental Perceptions versus Adolescent Reports

Several landmark studies have been done on the discrepancies between parental perception and adolescents' reports regarding substance use. At the forefront of this research is a study by Beck and several associates. Beck and colleagues (1999) collected data regarding the awareness of parents whose teens drink. Of those teens who drink and drive only 25% of parents were aware of this behavior. Less than one third of parents realized that their child was drinking at home and just over one third thought that their child was drinking while out. The study also revealed that parents of non-drinkers were less aware than parents of drinkers regarding attending parties with alcohol present or no supervision (Beck et al., 1999). Whether a parent's child was a drinker or not, it was clear that parents were unaware of their adolescents alcohol related risk taking (Beck et al., 1999).

To further confirm lack of awareness parents have of their adolescents risk taking behavior, Haynie and associates (1999) surveyed a nationwide sample of parents and their children. Teens reported significantly higher rates of attending parties with alcohol present, drinking at home, and drinking while out than parents perceived. Teens were much more likely to report going to places where alcohol was present, 70% of teen respondents compared to parental perceptions of only 54%. Likewise teens were over

twice as likely (48%) to report drinking while out than parents perceived (21%) (Haynie et al., 1999).

According to several researchers conducting recent studies there is a statistically significant difference in perception of substance use between parents and their children. Yang and associates (2006) conducted a study in which they compared prevalence of actual risk behavior as reported by teens with parental perceptions of risk behavior. The researchers showed that 56% of parents underestimated cigarette use, 72% underestimated alcohol use, and 73% underestimated marijuana use. However, only 5% of parents overestimated cigarette use, 9% for alcohol use, and 3% for marijuana use. The findings from this study imply that parents often underestimate their child's substance use.

Summary

Adolescents form their estimates of normal behavior through careful observation of close friends, comparisons with peers, and observations of what they hear and actually see (Unger & Rohrback, 2002). Researchers (Beck et al., 1999; Haynie et al., 1999) have shown differences in what students believe to be peer norms and actual norms.

Adolescents often exaggerate substance use by their peers (Beck & Treiman, 1996).

Most adolescents believe their peers are more permissive when it comes to substance use than is actually the norm (Perkins, 2003). Higher perceptions of alcohol and other drug use can attribute to increased substance abuse (Perkins, 2003).

Researchers indicate that parents frequently underestimate their children's involvement in substance use (Haynie et al., 1999; Miller & Plant, 2010; Williams et al., 2003). Many factors are involved in the misperception of substance use including adolescent age (Beck et al., 1999), denial on the part of parents (Beck et al., 1995; Beck & Treiman, 1996), and lack of parental knowledge (Crouter et al., 1999; Crouter et al., 2005). To overcome these misperceptions parents need to work to monitor their children (Luk et al., 2010) and become more knowledgeable about their whereabouts (Padilla-Walker et al., 2008; Waizenhofer et al., 2004).

Chapter 3: Methodology

Introduction

The purpose of this study is to gain a better understanding of adolescent and parent perceptions of substance use. The research design and methods for this study were chosen to provide insight into the perceptions of adolescents and parents about substance use. A description of the study design, participants, instrumentation, procedures, and data analysis are included in this chapter. Prior to data collection, this study was approved and conducted in accordance with Minnesota State University, Mankato Institutional Review Board guidelines for conducting research (See Appendix A).

Research Design

A non-experimental, cross-sectional research design was used to collect data, using a survey, from a 78 person sample population of both male and female high school students enrolled at a mid-sized rural school, as well as their parents, during the spring semester 2011. The study's intent was to examine the possible discrepancies between parents and their children, pertaining to perceptions of substance use. The rationale for conducting a non-experimental cross-sectional research design was due to the amount of time available to complete the study and develop conclusions.

Participants

Participants included a sample size of 62 high school students enrolled at a mid-sized rural school during the spring semester of 2011. Participants included both male

and female students who were between the ages of 15 and 18 years (10th – 12th grade). Participants voluntarily completed an online survey with the consent of their parents/guardians (see Appendix B) and their personal assent (see Appendix C). The parent sample was chosen based on the student sample. All parents of students who met the criteria were also invited to participate in the study. Twenty three parents agreed to complete the online survey. The sample selected was chosen based on accessibility of participants to the researcher. No incentives were offered for volunteering to participate in the online survey for either adolescents or parents.

Instrumentation

There were two separate surveys developed for this study. Survey questions for both instruments were comprised of questions modified from several existing instruments. Those include an instrument developed by Beck and his associates (1999); the National Survey of American Attitudes on Substance Abuse (National Center on Addiction and Substance Abuse 2010); and the Minnesota Student Survey (Minnesota Department of Education, Minnesota Department of Health, Minnesota Department of Human Services, & Minnesota Department of Public Safety, 2010). The electronic survey instrument developed for parents in this study contained 11 items (see Appendix D). The adolescent survey contained 14 items (see Appendix E). Both surveys included a demographic section and a perceptions section. The adolescent survey also contained an actual reported use data section. Items were used to assess parent and child perceptions of substance use as well as child reports of substance use.

Demographic information. The first portion of both surveys included demographic information. Demographic questions on the teen survey included age, gender, and household status. Demographic questions on the parent survey included gender, relationship to child, and marital status.

Perceptions and attitudes – for both parent and adolescent surveys. The adolescent perceptions and attitudes section was measured by six items on the survey. Questions used asked about perceptions of peers use of substances. The survey differentiated between close friends and peers (classmates in general). Responses for each question were open ended.

The parent perceptions and attitudes section was measured by seven items on the survey. Questions used asked about perceptions of adolescent use of substances. The survey differentiated between the parent's children and the children's peers. Responses for each question were open ended.

Substance use – only for adolescent survey. Actual substance use was measured by a five item section of the survey. Questions used asked about personal use alcohol and marijuana. Responses for three of the five questions were open ended, with two yes no questions relating to alcohol and marijuana use in the past 12 months.

Reliability. Permission was granted from the developers of each of the surveys listed above to use their instrument (See Appendix F). Beck (1999) sites the reliability of questions one through three and nine through 11 on the parent survey ranging between 83% and 100%. The National Center on Addiction and Substance Abuse (2010) has a

reliability of 95% for questions nine through 14 of the adolescent survey. Finally, the Minnesota Student Survey (Minnesota Department of Education et al., 2010) has a reliability of 85% on questions one through eight on the adolescent survey and four through eight on the parent survey.

Procedures

Permission to administer the survey was granted from Lake Crystal Wellcome Memorial Secondary School (see appendix G). Students in grades 10 through 12 at Lake Crystal Wellcome Memorial High School who were enrolled in High School Health or Life Fitness 10 during the spring semester of the 2010/2011 school year were surveyed along with their parents or guardians. Electronic surveys were completed during students' class time in a computer lab at LCWM Secondary School. A LCWM teacher other than the researcher was present to administer the study. Participants were ensured all responses remained anonymous and confidential and were asked to voluntarily complete an online survey. The survey was available for students on two separate occasions, February 16th, 2011 and February 17th, 2011. The survey was emailed to parents on three separate occasions, February 18th, 2011, February 22nd, 2011 and February 25th, 2011. To ensure the most responses possible from parents, a letter reminding parents about the electronic survey was sent home with students. Students were asked to have their parents sign the letter and return it to school.

Data Analysis

Data were entered into an SPSS spreadsheet for analysis. Substance use behavior of teenagers, teenagers' perceptions of social norms related to substance use, and parents' perceptions of social norms related to substance use in teenagers were determined through descriptive statistics. Differences between parents' and teenagers' perceptions of social norms related to substance use, as well as differences between parents' perceptions of social norms related to substance use of their own child and the substance use behaviors of teenagers were measured by independent sample t-tests. Parental perceptions of social norms of substance use and actual substance use behaviors of teenagers were analyzed using a chi-square. Finally, differences between students' perceptions of social norms and substance use behaviors of teenagers, as well as differences between teenagers' perception's of social norms related to substance use among their close friends and their perceptions of social norms related to substance use among peers, and differences between parents' perceptions of social norms related to substance use of their own child and their perceptions of social norms related to substance use of their child's peers were analyzed using paired sample t-tests.

Summary

A cross-sectional study was conducted to provide insight into the perceptions of adolescents and parents about adolescent substance use. After IRB approval was granted, 79 emails were sent out to parents and another 78 surveys were issued to students at Lake Crystal Wellcome Memorial High School. Data were collected for two weeks in an

effort to ensure enough power was seen in the response rate. A detailed description of the study findings is provided in the following chapter.

Chapter 4: Results and Discussion

Introduction

The purpose of this study was to gain a better understanding of adolescent and parent perceptions of substance use. A 14-item questionnaire was developed to collect data regarding teenagers' substance use behavior and perceptions of social norms. Also, an 11-item questionnaire was developed to collect data regarding parents' perceptions of substance use behavior by teenagers. Results from the quantitative analysis of data answering each research question and providing adequate discussion for each are presented in this chapter.

Demographic Results

Data regarding the demographics of the participants was collected, including gender, student age, parental marital status, and household information. Response rates included 63 teenage participants out of 78 (81%) possible respondents. Adjusted response rates for teenage participants were 62 out of 63 (98.4%) possible respondents as one respondent was removed from the data due to inappropriate responses. The respondent took the survey in a manner in which it was clear he failed to read the questions. Response rates for parents included 23 of 79 (29.1%) possible respondents.

Of the 62 teenagers that responded to the survey, 56.5% were male ($n = 35$) and 43.5% were female ($n = 27$). The mean age of the teenagers was 16.1 years ($SD = .95$) with a range of 15 to 18 years of age (see Table 1). Most of the teenage participants

reported that they lived with their biological mother and father (62.9%, $n = 39$) or their biological mother (14.5%, $n = 9$).

Twenty-three parents responded to the survey, 30.4% were male ($n = 7$) and 69.6% were female ($n = 16$) (see Table 2). Most of the parents (91.3%, $n = 21$) identified their relationship to a teenager that participated in the survey as a parent. Most of the parents (82.6%, $n = 19$) reported being married.

Research Questions and Results

The following section provides statistical analysis as well as data interpretation for each of the research questions presented in this study.

Question one: What are parents' perceptions of the social norms related to substance use in teenagers? Descriptive statistics were used to determine parents' perceptions of social norms related to substance use by teenagers. Most parents (87%, $n = 20$) reported that their child hadn't drunk alcohol and 91.3% ($n = 21$) of reported that their child hadn't used marijuana in the past 12 months (see Table 3). Very few parents reported that they believed their child had drunk during the past 30 days and those who did report perceived teen drinking reported low consumption rates. Parents reported that their children drank .14 ($SD = .65$) days in the past 30 days and on average drank .14 drinks ($SD = .65$) when they did drink (see Table 3). Although some parents (8.7%) believed their child had used marijuana in the past 12 months, no parents reported that they believed their child had used marijuana in the past 30 days (see Table 3). Parental perceptions of their child's peers' substance use was significantly higher than their

perception of their own child's use. Parent participants believed that 42.9% (SD = 23.6) of their child's peers used alcohol and 19.3% (SD = 19.2) of their child's peers used marijuana during the past 30 days (see Table 4).

Question two: What are teenagers' perceptions of the social norms related to substance use in teenagers? Descriptive statistics were used to determine teenagers' perceptions of social norms related to substance use in teenagers. Teens believed that on average, 22.9% (SD = 28.5) of their close friends and 45.3% (SD = 29.0) of their peers used alcohol in the past 30 days (see Table 5). When their close friends did drink teens believed that on average their close friends consumed 3.8 (SD = 3.9) drinks whereas they perceived that their peers consumed 4.9 (SD = 4.2) drinks (see Table 5). Teens believed that on average, 10.7% (SD = 20.9) of their close friends and 23.6% (SD = 26.3) of their peers used marijuana in the past 30 days (see Table 5).

Question three: What are the substance use behaviors of teenagers?

Descriptive statistics were used to determine teenagers' substance use behaviors. Just over half (56.5%, $n = 35$) of teenage participants reported using alcohol in the past 12 months whereas 12.9% ($n = 8$) reported using marijuana in the past 12 months (see Table 3). During the past 30 days teens reported using alcohol 1.1 (SD = 2.6) days and using marijuana 1.2 (SD = 4.8) days on average (see Table 3). When teenage participants did drink, they reported having 3.4 (SD = 3.9) drinks on average (see Table 6).

Question four: Is there a difference between parents' and teenagers' perceptions of social norms related to substance use? An independent sample t-test

was used to compare parents' and teenagers' perceptions of social norms related to substance use. The difference in perception of social norms of number of drinks at one time between parent and teen participants was statistically significant ($t = 2.00, p < .05$) (see Table 7). Parents believed that their children's peers usually consumed on average 3.6 ($SD = 1.3$) drinks when using alcohol whereas teens believed that their peers usually consumed 4.9 ($SD = 4.2$) drinks (see Table 7).

Question five: Is there a difference between parents' perceptions of social norms related to substance use among teenagers and the substance use behaviors of teenagers? A chi-square was used to compare parent's perceptions of their child's alcohol and marijuana use and teens reported alcohol and marijuana use. Differences in parental perception's of alcohol use compared to reported teen alcohol use was significant ($\chi^2 = 12.79, p < .01$) (see Table 8). More than half (56.5%, $n = 35$) of teens reported using alcohol in the past 12 months whereas 13% ($n = 3$) of parents believed their child had used alcohol in the past 12 months (see Table 8). Only 12.9% ($n = 8$) teens reported using marijuana in the past 12 months whereas 8.7% ($n = 2$) parents believed their child has used marijuana in the past 12 months (see Table 8).

An independent sample t-test was used to compare parents' perceptions of social norms and teens' alcohol use related to number of drinks drank at one time. The difference in perception of number of drinks at one time between parent and teen participants was not statistically significant ($t = -.37$) (see Table 8). Parental participants reported perceiving their child's peers as consuming 3.6 ($SD = 1.3$) drinks at one time whereas teens reported drinking 3.4 ($SD = 3.9$) drinks at one time (see Table 9).

Question six: Is there a difference between student's perceptions of social norms and the substance use behaviors of teenagers? Two independent sample t-tests were used to compare means of teens' perceptions of social norms of alcohol use and actual alcohol use behavior of teenagers. The difference in teens' perceptions of number of drinks drunk at one time by their friends and actual drinks at one time reported by teens was statistically significant ($t = -2.80, p < .01$) (see Table 10). The difference in teens' perceptions of number of drinks drunk at one time by their peers and actual drinks at one time reported by teens was also statistically significant ($t = -3.30, p < .01$) (see Table 11). Teenage participants reported usually having 3.8 (SD = 4.0) drinks at one time whereas they perceived their peers to be drinking 5.8 (SD = 4.4) drinks at one time (see Table 9) and their friends to be drinking 4.8 (SD = 4.1) drinks at one time (see Table 10).

Question seven: Is there a difference between parents' perceptions of social norms related to substance use of their own child and the substance use behaviors of teenagers? An independent sample t-test was used to compare parents' perceptions of their child's alcohol and marijuana use and teens reported alcohol and marijuana use. The difference in parents' perception and teens reported behavior was statistically significant ($t = 2.31, p < .05$) (see Table 12). Teens reported drinking 1.1 (SD = 2.6) days during the past 30 days whereas parents perceived their children to have drunk .14 (SD = .65) days during the past 30 days (see Table 12).

The difference in parents' perception and teens reported behavior was statistically significant ($t = 5.27, p < .01$) (see Table 12). When teens drank, they reported drinking

3.4 (SD = 3.9) drinks at one time. Parents perceived their children to drink .14 (SD = .65) drinks at one time, when they drank (see Table 12).

The difference in parents' perception and teens reported behavior was not statistically significant for marijuana use during the past 30 days (see Table 12). Teenage participants reported using marijuana 1.1 (SD = 4.8) days in the past 30 days. Parents believed that their child had not used marijuana in the past 30 days (see Table 12).

Question eight: Is there a difference between teenagers' perceptions of social norms related to substance use among their close friends and their perceptions of social norms related to substance use among peers? A paired sample t-test was used to compare mean scores of teens' perceptions of social norms related to close friends' and peers' use of alcohol and marijuana. The differences in teen perceptions of number of drinks drunk at one time by close friends and peers were not statistically significant (see Table 13). Teenage participants perceived friends to consume 4.1 (SD = 3.9) at one time whereas they perceived peers to consume 4.9 (SD = 4.2) drinks at one time (see Table 13). The differences in teen perceptions of alcohol use during the past 30 days by close friends and peers were statistically significant ($t = 6.60, p < .01$) (see Table 13). Teens perceived that 23.7% (SD = 28.7) of close friends used alcohol in the past 30 days whereas they perceived that 45.3% (SD = 29.0) of peers used alcohol in the past 30 days (see Table 13). The differences in teen perceptions of marijuana use during the past 30 days by close friends and peers were statistically significant ($t = 6.60, p < .01$) (see Table 13). Teenage participants perceived that 11.1% (SD = 21.2) of close friends used

marijuana in the past 30 days whereas they perceived that 23.9% (SD = 26.4) of peers used marijuana in the past 30 days (see Table 13).

Question nine: Is there a difference between parents' perceptions of social norms related to substance use of their own child and their perceptions of social norms related to substance use of their child's peers? A paired sample t-test was used to compare mean scores of parents' perceptions of social norms related to their child's peers and their child's use of alcohol. The differences in parental perceptions of drinks consumed at one time by their child and their child's peers was statistically significant ($t = 13.18, p < .01$) (see Table 14). Parents' perceived their child's peers to drink 3.6 (SD = 1.3) drinks when they drank whereas they perceived their child to drink .17 (SD = .71) drinks when they drank (see Table 14).

Discussion

This study, which illuminated the difference in perception of substance use behavior of teens, between parents and teens, found a significant difference between teenagers' and parents' perceptions of social norms related to substance use (see Table 7). Across the board, teen substance use behavior and perception of substance use behavior was higher than parental perceptions of substance use behavior. These findings coincide with findings from the previous researchers stating that parents frequently underestimate their children's involvement in substance use behavior (Haynie et al., 1999; Miller & Plant, 2010; Williams et al., 2003).

Differences in parental perception's of alcohol use and reported teen alcohol use were found (see Table 11). This finding is consistent with previous research (Beck et al., 1999; Haynie et al., 1999). Teens reported significantly higher rates of alcohol use in the past 12 months than their parents perceived. Based on the literature, the researcher was not surprised to see this higher rate of teenage use. What was surprising to the researcher was that parental perceptions of marijuana use over the past 12 months was not significantly different than teen reported use.

Significant differences were found between student's perceptions of social norms and the substance use behaviors of teenagers (Tables 9 and 10). These findings were consistent with previous research (Perkins, 2002; Unger & Rohrbach, 2001). Teens perceived the highest rates of use (number of drinks at one time) among peers (5.8), followed by close friends (4.8), and finally their own reported use (3.3). Although the differences in perceptions of use were expected, the significance of the differences were surprising to the researcher.

A significant difference was found between parents' perceptions of social norms related to substance use of their own child and the reported substance use behaviors of teenagers (see Table 12). This finding was consistent with previous research (Haynie et al., 1999; Miller & Plant, 2010; Williams et al., 2003). Parents significantly underestimated the number of days teens consumed alcohol during the past 30 days as well as the amount teens drank when they did drink. Parental estimations of marijuana use during the past 30 days was not found to be significantly different than teen reported use, which was not supported by previous research.

A significant difference was found between teenagers' perceptions of social norms related to substance use among their close friends and their perceptions of social norms related to substance use among peers (see Table 13). This finding was consistent with previous research (Agostinelli et al., 2003; Juvonen et al., 2007). Teens estimated that almost twice as many of their peers drank during the past 30 days than their close friends and that over two times as many peers used marijuana during the past 30 days than did their close friends. The differences in the number of drinks consumed at one time were not significant between peers and close friends. This finding is not supported by previous research.

Finally, a significant difference was found between parents' perceptions of social norms related to substance use among their child's peers and their perceptions of social norms related to substance use of their child (see Table 14). This finding was consistent with previous research (Beck et al., 1995; Beck & Treiman, 1996). Parents perceived their children's friends to drink significantly more at one time than they did their own child. The significance of the difference was surprising to the researcher.

Summary

The focus of this study was to compare teenagers' and parents' perceptions of substance use of teenagers. Sixty-two high school students and 23 parents from a mid-sized, rural school district participated in this study.

A significant difference was found between teenagers' and parents' perceptions of social norms related to substance use. Differences in parental perception's of alcohol use

compared to reported teen alcohol use were statistically significant. Significant differences were found between student's perceptions of social norms and the substance use behaviors of teenagers. A significant difference was found between parents' perceptions of social norms related to substance use of their own child and the reported substance use behaviors of teenagers. The difference in parents' perception and teens reported behavior was not statistically significant for marijuana use during the past 30 days. The difference in perception of number of drinks at one time between parent and teen participants was not statistically significant. A significant difference was found between teenagers' perceptions of social norms related to substance use among their close friends and their perceptions of social norms related to substance use among peers. The differences in teen perceptions of number of drinks drunk at one time by close friends and peers were not statistically significant. Finally, a significant difference was found between parents' perceptions of social norms related to substance use among their child's peers and their perceptions of social norms related to substance use of their child.

The following chapter will provide a thorough understanding of what the results of this study could mean to health educators including a summary of the study, conclusions, discussion, and future recommendations.

Chapter 5: Summary, Conclusions, and Recommendations

Introduction

The purpose of this study was to gain a better understanding of adolescent and parent perceptions of substance use. Previous research has suggests parents frequently underestimate their children's involvement in health risk behaviors such as substance use (Miller & Plant, 2010; Young & Zimmerman, 1998). Lack of communication about topics such as substance use seems to lead to a difference in perception of use (Luk. et al., 2010). In an attempt to explore the perceptions of both parents and teenagers this study examined teen substance use behavior as well as parent and teen perceptions of substance use.

Summary of the Study

Participants included a sample size of 62 high school students enrolled at a mid-sized rural school during the spring semester of 2011. Participants included both male and female students who were between the ages of 15 and 18 years (tenth to twelfth grade). Participants voluntarily completed an online survey. All parents of students who met the criteria were also invited to participate in the study. Twenty-three parents agreed to complete the online survey. The survey developed for the teenager study included a section dedicated to demographic information, substance use behavior, and perceptions of substance use. The parental survey included sections for demographic information and perceptions of teenage substance use.

Conclusion

In this study many parents perceived that their child did not use alcohol 87% or marijuana 91.3% (see Table 4). However, many parents believed that 42.9% of their child's peers used alcohol and 19.3% used marijuana during the past 30 days (see Table 6).

Teens surveyed believed that 22.9% of their close friends and 45.3% of their peers used alcohol in the past 30 days (see Table 5). When their close friends did drink teens believed that on average they consumed less (3.8 drinks) than other peers (4.9 drinks) (see Table 5). Teens believed that over twice as many of their peers (23.6%) used marijuana in the past 30 days than their close friends (10.7%) (see Table 5).

Teenage participants identified substance use behavior by reporting that 56.5% of those surveyed had used alcohol in the past 12 months whereas 12.9% reported using marijuana in the past 12 months (see Table 3). During the past 30 days teens reported using alcohol 1.1 days and using marijuana 1.2 days on average (see Table 3). When teenage participants did drink, they reported having 3.4 drinks on average (see Table 3).

A significant difference was found between teenagers' and parents' perceptions of social norms related to substance use (see Table 7). Differences in parental perceptions of alcohol use compared to reported teen alcohol use were statistically significant (see Table 11). Significant differences were found between student's perceptions of social norms and the substance use behaviors of teenagers (see Tables 9 and 10). A significant difference was found between parents' perceptions of social norms related to substance

use of their own child and the reported substance use behaviors of teenagers (see Table 12). A significant difference was found between teenagers' perceptions of social norms related to substance use among their close friends and their perceptions of social norms related to substance use among peers (see Table 13). Finally, a significant difference was found between parents' perceptions of social norms related to substance use among their child's peers and their perceptions of social norms related to substance use of their child (see Table 14).

Future Recommendations

Several recommendations are made by the researcher at the completion of this study.

Recommendations for improving research. A significant improvement to the present research study would be seen with a higher response rate and a larger sample size. Incentives were not offered for participation in the study. With an offer of some sort of incentive participation may have improved. A larger sample size could have been accomplished by inviting more students from the school district that participated as well as involving other school districts in the area.

The survey was administered online. While this was not a problem for the teen participants, parental participation seemed to be affected by the format. Had the survey been distributed to parents as a paper and pencil questionnaire the response rate most likely would have increased. The belief of the researcher is that many parents may not have received the email for the survey because of email filtering devices.

Rewording of several survey questions so that the terminology between areas of the survey matched would have lead to more in-depth results. Questions on the teen survey regarding how often one used substances during the last 30 days could have been matched so the actual teen data and teens' perception of substance use could be compared. Also, question nine on the parent survey should have asked about peers' use during the last 30 days. As it was worded on the survey it could not be compared to teen use or perceptions.

Recommendations for health educators. According to the Institute of Medicine, coordinated school health (CSH) is an integrated set of planned, sequential school affiliated strategies, activities, and services designed to promote the optimal physical, emotional, social, and educational development of students. The program involves, and is supportive of, families and is determined by the local community needs, standards, and requirements. The Centers for Disease Control and Prevention (2010) points out that parents are integral components of quality coordinated school health program (CSH).

Educating our youth not only on core curriculum but also instilling values has increasingly become the responsibility of the school. Between pressures to meet test scores and student achievement recommendations, schools cannot fulfill all their duties. Health educators need to work with parents to help bridge the communication gap between parents and teenagers. Promoting activities and assignments that allow for parents and teenagers to work together will help parents continue to be that intergal component of a quality corrdated school health program. The role of the school is to help empower parents (Institute of Medicine, 1997).

Research has found that parents have a strong influence on adolescents' substance use behavior (Peterson, 2010). Communication and parenting behaviors can either positively or negatively influence adolescent behaviors related to substance use. Having parents who model healthy behaviors appears to serve as a protective factor to adolescent substance use. In contrast, parents who fail to monitor their children and infrequently communicate tend not to know what their child is involved in, leading to an increase in substance use (Peterson, 2010).

Through the guidelines of a CSH health education needs to find ways to educate parents on the potential risk behaviors in which their child might be engaging. Although doing so, schools should also provide guidance to parents on how to reduce their child's chances of engaging in risk behaviors. The purpose of this study was to provide some baseline data about parent-child communication in order to identify whether there is a "disconnect" between parents and their teenager.

Recommendations for future research. Although the social norms construct has been well researched more research is needed to help identify the best possible ways to convey social norms to teenagers. Much research on this has been conducted at the college level but very little has been done at the high school level. Future research in this area would help health educators inform students of the misperceptions and therefore decrease teenage substance use.

As this study showed, teens and parents have different perceptions of teen substance use. The question still remains as to what factor are causing this difference in

perception. Future research should look into demographic factors that may play a role in parental misperceptions.

There already is a great deal of research showing that parents are not always aware of their child's substance use behavior. More research is needed to decipher why there is such a difference in parental perception of substance use and reported teen substance use. A better understanding of the differences between parental perception and teenage substance use behavior may create the opportunity for health educators to provide curriculum to better address this issue.

Summary

This study attempted to compare perceptions of substance use behavior between parents and teenagers. A significant difference between teenagers' and parents' perceptions of social norms related to substance use was identified. For example, what teens perceived to be normal substance use behavior was significantly different from what parents perceived to be normal substance use behavior. Differences in parental perceptions of alcohol use and reported teen alcohol use were found. This showed that teens reported consuming alcohol more than parents perceived that they were. Parents' perceptions were confirmed true when it comes to teenage marijuana use as no significant difference was found. Significant differences were found between student's perceptions of social norms and the substance use behaviors of teenagers. This showed teens perceive others to be using more than they really are. A significant difference was found between parents' perceptions of social norms related to substance use of their own child

and the reported substance use behaviors of teenagers. This finding confirmed that parents perceive their own child to be less involved in substance use behavior than their child's peers. Finally, a significant difference was found between teenagers' perceptions of social norms related to substance use among their close friends and their perceptions of social norms related to substance use among peers. This means that teens perceive their close friends to use substances less than their other peers.

A few ideas for improvement of the current study were recommended by the researcher. Incentives for participants may increase participation. Also, an increase in the number of surveys distributed, by including more students from as school or more school districts, would increase participation. Finally, administering the survey in a paper and pencil format for the parents may increase parental participation.

The researcher recommended that health educators work to help close the gap in perception between parents and teens through the use of coordinated school health programs. This would involve the parents in the child's health education more and provide opportunities for parents and children to communicate more freely. Researcher recommended that future research look to advance the study of social norms programs in the high school setting. Also a closer look at factors that lead to the differences in parent and teen perceptions should be considered in future research.

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Appendix A

IRB Approval



Dr. Marge Murray-Davis
Department of Health Science
Highland North 213
Minnesota State University, Mankato
Mankato, MN 56001

Tony Stadtherr
14 Kingfisher Court
North Mankato, MN 56003

February 11, 2011

Dear Marge & Tony:

Re: IRB Proposal, Log #3714 entitled "*Adolescent Substance Use: Perceptions of Parents and Teenagers*"

Your IRB Proposal has been approved as of February 7, 2011. On behalf of the Institutional Review Board I wish you success with your study. Remember that you must seek approval for any changes in your study, its design, funding source, consent process, or any part of the study that may affect participants in the study. Should any of the participants in your study suffer a research-related injury or other harmful outcome, you are required to report them to the IRB as soon as possible.

The approval of your study is for one calendar year from the approval date. When you complete your data collection, or should you discontinue your study, you must notify the IRB. Please include your log number with any correspondence with the IRB.

This approval is considered final when the full IRB approves the monthly decisions and active log. The IRB reserves the right to review each study as part of its continuing review process. Continuing reviews are usually scheduled. However, under some conditions the IRB may choose not to announce a continuing review.

Sincerely,

A handwritten signature in cursive script that reads "Patricia M. Hargrove".

Patricia M. Hargrove, Ph.D.
IRB Coordinator
Cc: File

Appendix B

Survey Consent

Parent/Guardian Consent Form

You and your child, _____, are invited to participate in a research study being conducted by myself, Tony Stadtherr, a Master's degree student in the Health Education program at Minnesota State University, under the supervision of Principal Investigator Marge Murray-Davis. The purpose of this study is to provide some baseline data about parent-child communication involving substance use in order to identify whether there is a "disconnect" between parents and their teenager. Your participation in this study is completely voluntary.

Procedures

If you agree for you and your child to participate you will both be asked to fill out an online survey that will take about 10 minutes to complete. Your child will complete the survey in school and you will be sent an email with a link to the survey. Your child will be asked about personal substance use and perceptions of peer substance use. You will be asked about perceptions of your child's substance use.

Potential Risks to Your Child

The process of participating in this study should present minimal risk to you and your child. However, whenever one works with email/the internet there is always the risk of compromising privacy, confidentiality, and/or anonymity. Answering questions on

such a sensitive subject could cause emotional stress. Therefore the school counselor and social worker will be on hand to assist. Keep in mind that you or your child's name will not be on record for any of the data collected.

Benefits to Your Child

This study could result in changes to the Health Education curriculum at Lake Crystal Wellcome Memorial that will better suit the needs of students in the community.

Confidentiality

All information obtained in this project will be kept private by the staff of this research project. All information will be stored in a locked file cabinet. It can be viewed only by authorized research staff members. No information about you or your child will be released and no names will be recorded other than the consent forms.

Right to Refuse Participation

Participation in this project is voluntary and you and your child have the right to stop at any time. Ending your participation (or choosing not to participate) will not affect your relationship or your child's relationship with his/her school or Minnesota State University. You may request a copy of the study's results (but not your child's results), which would be mailed to you after the end of the study.

Contact Information

If you have any questions, please feel free to contact me, Tony Stadtherr, via email at tonystadtherr2@yahoo.com. You may contact Principal Investigator Dr. Murray-Davis at 507-389-2709 or marge.murray-davis@mnsu.edu about any concerns you have about this project. The contact person for concerns about the treatment of human subjects an/or if there is a research-related injury is the IRB Administrator Dr. Terrance Flaherty. You may contact Dr. Flaherty at terrance.flaherty@mnsu.edu.

Enclosed is a copy of this letter for you to keep. Please complete the section below on one copy of this letter and have your child return it to school. If you have any questions or would like anything clarified, please wait to sign and return this letter until you have spoken with me or Dr. Murray-Davis. Your signature indicates that you have read and understand the information above, that you willingly agree to participate, that you may withdraw at any time and discontinue participation without penalty, that you will receive a copy of this form, and that you are not waiving any legal claims, rights, or remedies. Thank you so much for your consideration.

Name of Parent/Legal Guardian (please print) _____

Print Child's Name _____

Signature of Parent/Legal Guardian _____ Date _____

Appendix C

Assent Form

Assent Form

I am a student from Minnesota State University, Mankato. You are being asked to be part of a research project that will help adults (teachers and parents) understand problems concerning adolescent substance use. Your part of this project will be to answer questions regarding personal substance use behavior as well as perceptions of substance use among peers. If you agree to participate, you will be taking an online survey. Your answers to the questions will be completely confidential, which means the teachers, parents, other students, and even the researcher will never know how you answer the questions. Teachers will use the answers and this research to develop meaningful curriculum for the health education classes in this school. Results will also be used to help develop information for parents to help them better communicate with their children.

Potential Risks

The process of participating in this study should present minimal risk to you. However, whenever one works with the internet there is always the risk of compromising privacy, confidentiality, and/or anonymity. Answering questions on such a sensitive subject could cause emotional stress. Therefore the school counselor and social worker will be on hand to assist. Keep in mind that you or your name will not be on record for any of the data collected.

Right to Refuse Participation

Participation in this project is voluntary and you have the right to stop at any time. Ending your participation (or choosing not to participate) will not affect your relationship with his/her school or Minnesota State University.

Your parents have given permission for you to participate in this study. The survey will take about 10 minutes. You may withdraw from participation at any time. You will not receive anything for answering the questions. This is not a test and your answers cannot be wrong. Your answers will not be linked to you in any way.

Thank you for participating in this study.

Date: _____

Signed: _____

Appendix D

Parent Survey

Parental Background

1. Are you:
 - a. Male
 - b. Female

2. How would you define your relationship to the teenagers (between the ages of 14 and 19) in your house? (check all that apply)
 - a. Parent
 - b. Adoptive Parent
 - c. Step parent
 - d. Foster parent
 - e. Other

3. Are you: (check all that apply)
 - a. Married
 - b. Living with a partner
 - c. Living on your own (with children or without)
 - d. Widowed
 - e. Divorced
 - f. Separated
 - g. Never married
 - h. None

Parental Substance Use Perceptions

Answer the following questions based on your child nearest to the age of 16.

The next questions ask about drinking alcoholic beverages, including beer, wine, wine coolers, and liquor.

4. During the last 12 months, do you think your child has had any alcoholic beverages?
 - a. No
 - b. Yes

If you answered No to question four, skip to question seven.

5. During the last 30 days, on how many days do you think your child has drunk one or more drinks of an alcoholic beverage?
_____ Days

6. If your child drinks beer/wine/wine coolers/hard liquor, generally, how much (if any) do you think he/she drinks at one time?
_____ Glasses, cans, drinks
7. During the last 12 months, do you think your child used marijuana?
 - a. No
 - b. Yes
8. During the last 30 days, on how many days do you think your child used marijuana?
_____ Days
9. What percentage of your child's peers (classmates and other acquaintances, not friends) do you think use alcohol?
_____ %
10. When your child's peers (classmates and other acquaintances, not friends) drink, how many drinks, at one time, do you think they typically have (one drink is equal to one can of beer, one shot of liquor, or one glass of wine)?

_____ Glasses, cans, drinks
11. What percentage of your child's peers (classmates and other acquaintances, not friends) do you think use marijuana?
_____ %

Appendix E
Student Survey

Teen Background

1. Are you:
 - a. Male
 - b. Female

2. How old are you?
 - a. 14
 - b. 15
 - c. 16
 - d. 17
 - e. 18
 - f. 19

3. Which adults do you live with? (mark all that apply)
 - a. The woman who gave birth to me (my biological mother)
 - b. My biological father
 - c. Sometimes with my mother, sometimes with my father
 - d. The mother that adopted me
 - e. The father that adopted me
 - f. My stepmother
 - g. My stepfather
 - h. My foster parent(s)
 - i. My grandparent(s)
 - j. Other relative(s)
 - k. An adult or adults I am not related to
 - l. None

Teen Substance Use Behavior

The next questions ask about drinking alcoholic beverages, including beer, wine, wine coolers, and liquor.

4. During the last 12 months, have you had any alcoholic beverages?
 - a. No
 - b. YesIf you answered No to question four, skip to question seven.

5. During the last 30 days, on how many days did you drink one or more drinks of an alcoholic beverage?
_____ Days

6. If you drink beer/wine/wine coolers/hard liquor, generally, how much (if any) do you drink at one time?
_____ Glasses, cans, drinks
7. During the last 12 months, have you used marijuana?
 - a. No
 - b. Yes
8. During the last 30 days, on how many days did you use marijuana?
_____ Days

Teen Substance Use Perceptions

9. Thinking now about your own close circle of friends, what percentage do you think, during the last 30 days, drank beer or other alcoholic drinks pretty regularly, like most weekends?
_____ %
10. When your friends drink, how many drinks, at one time, do they typically have (one drink is equal to one can of beer, one shot of liquor, or one glass of wine)?
_____ Glasses, cans, drinks
11. Thinking again about your own close circle of friends, what percentage do you think, during the last 30 days, used marijuana pretty regularly, like most weekends?
_____ %
12. When considering your peers (classmates and other acquaintances), what percentage do you think, during the last 30 days, drank beer or other alcoholic drinks pretty regularly, like most weekends?
_____ %
13. When considering your peers (classmates and other acquaintances), at one time, do they typically have (one drink is equal to one can of beer, one shot of liquor, or one glass of wine)?
_____ Glasses, cans, drinks
14. When considering your peers (classmates and other acquaintances), what percentage do you think, during the last 30 days, used marijuana pretty regularly, like most weekends?
_____ %

Appendix F

Permission to use Survey Questions

Kenneth Beck

Dear Mr. Stadtherr:

You have my permission to use questions from the survey instrument. I have located a paper copy of the instrument; it's over 10 years old. Unfortunately, I do not have an electronic copy. Thus, it will take a few days before I can arrange to have the entire Parent and Teen versions of the survey copied.

Sincerely,

Ken Beck

Kenneth H. Beck, PhD, FAAHB

Professor, Department of Public & Community Health

University of Maryland School of Public Health

Minnesota Student Survey

Hi Tony,

You do not need permission to use any of the survey questions, they are public domain. If you need more detail you can contact Pete Rode at the MN Dept of Health who works with the raw data peter.rode@state.mn.us.

Kathy

CASA

Hi Tony,

You may use questions from CASA's survey instrument to incorporate into your thesis survey as long as you credit The National Center on Addiction and Substance Abuse at Columbia University where appropriate.

Sincerely,

Lauren Duran

Appendix G
Permission to Administer Surveys

Independent School District #2071
Lake Crystal Wellcome Memorial Secondary School
607 Knights Lane, PO Box 160
Lake Crystal, MN 56055-0160
Phone 507-726-2110 • FAX 507-726-2283
Mrs. Linda Isebrand, Principal

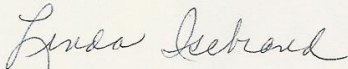
January 27, 2011

To Whom It May Concern:

I have read and reviewed the information related to the IRB proposal for Tony Stadtherr, which outlines his purpose, project description and collection of data. I understand the method by which he expects to gather parental/family consent, as well as the data for his research.

Tony has my permission to complete the data collection for his study during the regular school hours.

Sincerely,



Linda Isebrand
LCWM Secondary Principal

An Equal Opportunity Employer

Table 1

Demographic Characteristics of the Students

| Characteristic | n | % | M (SD) |
|---|----|------|-------------|
| Gender | 62 | | |
| Male | 35 | 56.5 | |
| Female | 27 | 43.5 | |
| Age | 62 | | 16.13 (.95) |
| 15 | 20 | 32.3 | |
| 16 | 18 | 29.0 | |
| 17 | 20 | 32.3 | |
| 18 | 4 | 6.5 | |
| Adults they live with | 62 | | |
| Biological mother and biological father | 39 | 62.9 | |
| Biological mother | 9 | 14.5 | |
| Time split between mother and father | 2 | 3.2 | |
| Foster parent(s) | 2 | 3.2 | |
| Biological mother/stepmother | 3 | 4.8 | |
| Biological mother and adoptive father | 2 | 3.2 | |
| Biological mother and grandparents | 2 | 3.2 | |
| Adopted parents | 1 | 1.6 | |
| Time split between mother and father /unrelated adult(s) | 1 | 1.6 | |
| Time split between biological parents /step mother/foster parent(s)/grandparent(s) | 1 | 1.6 | |

Table 2

Demographic Characteristics of the Parents

| Characteristic | n | % |
|-------------------------------|----|------|
| Gender | 23 | |
| Male | 7 | 30.4 |
| Female | 16 | 69.6 |
| Relationship to child | 23 | |
| Parent | 21 | 91.3 |
| Adoptive parent | 2 | 8.7 |
| Marital Status | 23 | |
| Married | 19 | 82.6 |
| Living with a partner | 1 | 4.3 |
| Widowed | 1 | 4.3 |
| Divorced | 1 | 4.3 |
| Married/Living with a partner | 1 | 4.3 |

Table 3

Parental Perceptions of Their Teen's Alcohol and Marijuana Use

| Behavior | n | % | Minimum - Maximum | M (SD) |
|---|----|------|----------------------|-----------|
| Any alcohol use past 12 months | 23 | | | |
| No | 20 | 87.0 | | |
| Yes | 3 | 13.0 | | |
| Number of days drank past 30 days | 21 | | 0 – 3 | .14 (.65) |
| Usual number of drinks at one time | 21 | | 0 – 3 | .14 (.65) |
| Any marijuana use past 12 months | 23 | | | |
| No | 21 | 91.3 | | |
| Yes | 2 | 8.7 | | |
| Number of days used marijuana past 30 days | 21 | | 0 | .00 (.00) |

Table 4

Parental Perceptions of Their Child's Peers' Alcohol and Marijuana Use

| Behavior | n | Minimum - Maximum | M (SD) |
|---|----|----------------------|---------------|
| Peers' use of alcohol | 22 | 8 – 85 | 42.86 (23.57) |
| Peers' usual number of drinks at 1 time | 18 | 2 – 6 | 3.64 (1.26) |
| Peers' use marijuana past 30 days | 22 | 0 – 80 | 19.32 (19.23) |

Table 5

Teen Perceptions of Norms Related to Alcohol and Marijuana Use

| Behavior | n | Minimum - Maximum | M (SD) |
|--|----|----------------------|---------------|
| Close friends' use of alcohol past 30 days | 62 | 0 – 100 | 22.89 (28.50) |
| Friends' usual number of drinks at 1 time | 50 | 0 – 15 | 3.75 (3.89) |
| Close friends' use marijuana past 30 days | 62 | 0 – 80 | 10.71 (20.91) |
| Peers' use of alcohol past 30 days | 59 | 0 – 100 | 45.27 (29.04) |
| Peers' usual number of drinks at 1 time | 61 | 0 – 24 | 4.95 (4.18) |
| Peers' use of marijuana past 30 days | 60 | 0 – 90 | 23.57 (26.29) |

Table 6

Teen Alcohol and Marijuana Use

| Behavior | n | % | Minimum - Maximum | M (SD) |
|---|----|------|----------------------|-------------|
| Any alcohol use past 12 months | 62 | | | |
| No | 27 | 43.5 | | |
| Yes | 35 | 56.5 | | |
| Number of days drank past 30 days | 41 | | 0 – 10 | 1.13 (2.60) |
| Usual number of drinks at one time | 42 | | 0 – 12 | 3.39 (3.91) |
| Any marijuana use past 12 months | 62 | | | |
| No | 54 | 87.1 | | |
| Yes | 8 | 12.9 | | |
| Number of days used marijuana past 30 days | 50 | | 0 – 25 | 1.16 (4.76) |

Table 7

Independent-Sample t Tests Comparing Parent's and Teen's Perceptions of Social Norms Related to Alcohol Use

| Social Norm | Parents M (SD) | Teens M (SD) | t |
|---|-------------------|-----------------|-------|
| Peers' usual number of drinks at 1 time | 3.64 (1.26) | 4.95 (4.18) | 2.00* |

* = $p = .05$.

Table 8

Chi-Square Comparing Parent's Perceptions of Their Childs' Alcohol and Marijuana Use and Teens Reported Alcohol and Marijuana Use

| Behavior | Parents | | | | Teen | | | | χ^2 |
|-----------------------------------|---------|-------|----|-------|------|-------|----|-------|----------|
| | Yes | | No | | Yes | | No | | |
| | n | % | n | % | n | % | n | % | |
| Use of alcohol past 12 month | 3 | 13.04 | 20 | 86.96 | 35 | 56.45 | 27 | 43.55 | 12.798** |
| Use of marijuana past 12 month | 2 | 8.70 | 21 | 91.30 | 8 | 12.90 | 54 | 87.10 | .29 |

* = $p < .05$. ** = $p < .01$.

Table 9

Independent-Sample t Test Comparing Parent's Perceptions of Social Norms and Teen's Alcohol and Use

| Social Norm/Behavior | Parents | | Teens | | t |
|----------------------------------|---------|-------------|-------|-------------|------|
| | n | M (SD) | n | M (SD) | |
| Usual number of drinks at 1 time | 23 | 3.64 (1.26) | 62 | 3.39 (3.91) | -.37 |

* = $p < .05$. ** = $p < .01$.

Table 10

Paired-Sample t Test Comparing Mean Scores of Students' Perceptions of Close Friends' Norms Related to Use of Alcohol and Their Personal Use of Alcohol

| Social Norm | n | Teen M (SD) | Friends M (SD) | t |
|----------------------------------|----|----------------|-------------------|---------|
| Usual number of drinks at 1 time | 40 | 3.29 (3.84) | 4.78 (4.07) | -2.80** |

* = $p < .05$. ** = $p < .01$.

Table 11

Paired-Sample t Test Comparing Mean Scores of Students' Perceptions of Peers' Norms Related to Use of Alcohol and Their Personal Use of Alcohol

| Social Norm | n | Teen M (SD) | Peers M (SD) | t |
|----------------------------------|----|----------------|-----------------|---------|
| Usual number of drinks at 1 time | 36 | 3.82 (4.03) | 5.78 (4.41) | -3.30** |

* = $p < .05$. ** = $p < .01$.

Table 12

Independent Sample t Tests Comparing Parents' Perceptions of Their Childs' Alcohol and Marijuana Use and Teens Reported Alcohol and Marijuana Use

| Behavior | Parents M (SD) | Teen M (SD) | t |
|----------------------------------|-------------------|----------------|--------|
| Use of alcohol past 30 days | .14 (.65) | 1.13 (2.60) | 2.31* |
| Usual number of drinks at 1 time | .14 (.65) | 3.39 (3.91) | 5.27** |
| Use of marijuana past 30 days | .00 (.00) | 1.16 (4.76) | 1.72 |

* = $p < .05$. ** = $p < .01$.

Table 13

Paired Sample t Test Comparing Mean Scores of Teens' Perceptions of Social Norms Related to Close Friends' and Peers' Use of Alcohol and Marijuana

| Social Norm/Behavior | n | Friends M (SD) | Peers M (SD) | t |
|----------------------------------|----|-------------------|-----------------|---------|
| Usual number of drinks at 1 time | 50 | 4.13 (3.89) | 4.85 (4.16) | -1.82 |
| Use of alcohol past 30 days | 60 | 23.65 (28.66) | 45.27 (29.04) | -6.60** |
| Use of marijuana past 30 days | 59 | 11.08 (21.18) | 23.91 (26.38) | -3.61** |

* = $p < .05$. ** = $p < .01$.

Table 14

Paired Sample t Test Comparing Mean Scores of Parents' Perceptions of Social Norms Related to Their Childs' Peers and Their Childs' Use of Alcohol

| Social Norm/Behavior | n | Peers M (SD) | Child M (SD) | t |
|----------------------------------|----|-----------------|-----------------|-----------|
| Usual number of drinks at 1 time | 18 | 3.64 (1.26) | .17 (.71) | -.13.18** |

* = $p < .05$. ** = $p < .01$.