Gender-Specific Parent-Child Relationship Factors and Substance Use among At-Risk Adolescents

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Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
In
Human Development

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April 26th, 2017

Blacksburg, VA

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ABSTRACT

Substance use is a growing concern among adolescents because it is a threat to their well-being and associated with negative outcomes in later life (NIH, 2014). Adolescence is a developmentally important time where independence grows, risks are taken, and some begin to experiment with substances (Burrow-Sanchez, 2006). Further, there is a high association between substance use and risk-taking behaviors, which can lead to involvement in the juvenile justice system. The rates of substance use are more alarming for juvenile delinquents (78%) (National Center on Addiction and Substance Abuse, 2004). Along with risk factors associated with early onset substance use, researchers have identified several protective factors including involvement in positive relationships with parents. In this dissertation, I studied gender-specific relationships between parent and child that were associated with lower rates of substance use among at-risk adolescents. I investigated if this relationship mitigated the effects of negative peer association on substance use among adolescents. Hierarchical logistic regression was used to complete analysis using secondary data. The sample consisted of 166 adolescents who were involved in the juvenile justice system. Results showed that higher relationship quality with mothers was found to be statistically significant in predicting lower substance use. Overall, gender was not found to predict substance use, nor did it moderate the relationship between negative peer association and substance use. Results from this study can inform prevention and intervention efforts by heightening awareness regarding the protective nature of relationships with parents, specifically with mothers for at-risk adolescents. Further research is needed to explore these gender differences more in-depth. It will be important to continue to explore

gender-specific relationships and the various aspects of parenting that can lower the risk for substance use among at-risk adolescents.

General Audience Abstract

Gender-specific parent-child relationships were studied in this dissertation to explore protective relationships that are associated with lower rates of substance use among at-risk adolescents. This study included an investigation on relationships that mitigate the influence of negative peer association on substance use among adolescents. The sample included 166 adolescents who were involved in the juvenile justice system. Results showed that higher relationship quality with mothers predicted lower substance use for teens. These results can inform prevention and intervention efforts by improving awareness regarding relationships with parents that appear to be protective, specifically with mothers and at-risk adolescents. Further research is needed to explore these gender differences more in-depth. It will be important to continue to explore gender-specific relationships and the various aspects of parenting that can lower the risk for substance use among at-risk adolescents.

Dedication

I dedicate this dissertation to my husband and daughter who have sacrificed so much quality time with me, so I could complete this final task.

To my husband, Mike, you gave me the encouragement I needed to get through this journey and you never stopped believing in me. Your support has meant the world to me. Thank you for being my number one supporter in everything I do.

To my little girl, Mayan, who inspires me in more ways than she'll ever know. You made me feel a love I never knew existed. That love has inspired me to be the best parent I can be and to help strengthen other parent-child relationships through my clinical work and research. I am so proud to be your mom.

Acknowledgements

The dataset for this project was graciously provided by Dr. Cheri Hartman at Carilion Clinic. I am grateful to have crossed paths with you three years ago. I remember feeling inspired by your presentation on resilience among youth. I thank you for supporting me through the process of getting the approval to release the data. I know that was not an easy task. I appreciate your willingness to let me use your data to complete my dissertation.

I greatly appreciate all the support from my committee members who took the time to help me throughout this process. Dr. Fred Piercy, thank you for sharing your wisdom. I came into this program knowing that I wanted you as my advisor. I appreciate the feedback you have provided in classes and throughout the dissertation process. I believe that I have become a stronger writer because of you. You have always been encouraging and for that I am grateful. I have enjoyed connecting with you on our shared interest of traveling the world and experience living abroad. It has been an honor working with you.

Dr. Megan Dolbin-MacNab, I have learned so much from you through supervision, class, and research. I will never forget the support you gave me through the difficult transition of managing my new role as a mom while continuing to meet all the program requirements. I have always appreciated all the guidance you have given me. Thank you for being one of my biggest supporters since day one.

Dr. Gerard Lawson, thank you for all the valuable feedback you have provided. I appreciate the support and encouragement you have given me through each milestone.

Dr. Erika Grafsky, I am thankful for the support you provided through supervision and class. I have enjoyed connecting with you on our similar interest for experiential therapy. Thank you for joining my committee to help me finish this final step.

Dr. Peggy Meszaros, you have inspired me since day one! I have always been amazed by your accomplishments, strong-will, and resilience. I have grown in my professional development because of the experience you brought into pro-sem. Thank you for being a part of my committee.

To all the mentors I have gathered throughout the years, you have all had a major impact on my life and have greatly contributed to the person I am today. Thank you for inspiring me through your teaching, research, and service. You all have a special place in my heart.

To my friends and cohort members, you have all helped me immensely whether I needed a push to keep working or needed a good laugh. You have brightened many of my days and encouraged me to persevere.

To my grandma, mom, dad, and sister, thank you for your love and always believing in me.

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Chapter 1: Introduction

Statement of the Problem

Adolescent drug and alcohol use is an area of concern that threatens the well-being of teens and their future, as it is associated with several negative outcomes (NIH, 2014). Earlier onset of drug and alcohol use can increase the risk for developing an addiction (NIH, 2014). Consistent findings also reveal the link between substance abuse and delinquency, which is associated with involvement in the juvenile justice system (Childs, Dembo, Belenko, Wareham, & Schmeidler, 2011). This inevitably puts adolescents at greater risk for further involvement in the criminal justice system throughout adulthood (Childs et al., 2011).

In this dissertation, I used secondary data to study the protective influence that quality parent-child relationships may have on adolescents who have been involved in the juvenile justice system. For this study, a quality relationship is described as an adolescent's perception of the level of emotional support and approval they receive from their parents. First, I investigated the association between relationship quality with each parent and substance use. Also, I tested if there was variation in relationship quality with each parent for male and female adolescents. I investigated how this quality parent-child relationship can moderate the relationship between the negative peer association and the frequency and poly-substance use among adolescents. I further investigated how the protective parent-child relationship can vary based on the interaction between the gender of parent and child.

The resilience literature is extensive; however, little is known about these gender-specific relationships between parent and child, which can vary in protective influence and may reduce frequency and poly-substance use. Resilience involves complex processes of interrelated risk and protective factors at individual, family, and community levels (Vanderbilt-Adriance & Shaw,

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2008). These processes have potential to fluctuate at different ages and developmental stages (Vanderbilt-Adriance & Shaw, 2008). There is more need to explore mediating and moderating processes of resilience and how resilience processes are relevant for both sexes (Taylor et al., 2003). This information can be beneficial in understanding protective relationships for at-risk adolescents. Further, these results can inform prevention and treatment programs by heightening the awareness among treatment providers of the importance of including parents in the process.

Background of the Problem

A recent survey released from National Institute of Drug Abuse (NIDA) revealed that drug use and attitudes among 8th, 10th, and 12th graders have been changing in recent years (NIH, 2016). Substance use has been declining or maintaining constant (NIH, 2016). While this news is encouraging, the risk for drug abuse increases greatly during transitional periods, such as adolescence (NIH, 2014). When teens enter high school, they encounter older teens using drugs and alcohol, there is more availability, and more social activities where substances are used (NIH, 2014). Many of the normal developmental milestones during adolescence may further increase their risk to use such substances. Risks include adolescents' desire to try new things and take more risks (NIH, 2014). Due to the continuous development of judgement and decision-making, this can limit their ability to properly assess the risks associated with drug and alcohol use (NIH, 2014). Early age of drug or alcohol use is associated with a variety of negative consequences as highlighted below.

Early onset drinking is associated with increased heavy drinking and alcohol dependency later in life, driving under the influence or while intoxicated, riding with a high or drunk driver, obtaining medical attention due to sustaining injuries after drinking (Hingson, Heeren, Zakocs, Winter, & Wechsler, 2003), and experiencing motor vehicle accidents (Hingson, Edwards,

Heeren, & Rosenbloom, 2009). The earlier the onset of alcohol use, the more likely one will develop dependence within ten years of first use and before age twenty-five (Hingson, Heeren, & Winter, 2006). Similarly, adolescents who abuse drugs are at greater risk for unplanned pregnancies, violence, and infectious diseases (NIH, 2014). College students who were first drunk before age thirteen were found to be more likely to have unplanned and unprotected sex while drinking (Hingson, Heeren, Winter, & Wechsler, 2003). There are several long-term consequences that are associated with early onset drug and alcohol use (Hingson, Heeren, Winter, & Wechsler, 2003). These consequences can be life-long and can affect adolescents physically, emotionally, and socially.

Drug and alcohol use and abuse among teens puts them at greater risk for several negative outcomes throughout life (The National Child Traumatic Stress Network, 2008). Teens who use alcohol and drugs experience family and social problems, poor academic performance, and health-related problems (NIH, 2014). Substance abuse affects parts of the brain that are associated with learning, memory, critical thinking, planning, impulse control, and emotional regulation (De Bellis et al., 2005; Zeigler et al. 2005). Furthermore, substances have been shown to destabilize mood, which has been associated with increased rates of depression, aggression, violence, and suicide (Diamond et al., 2006).

Due to the developmental changes during adolescence, it is not surprising that they are also at risk for involvement in the juvenile justice system (NIH, 2014). Re-offending and continuous involvement in the justice system have a variety of negative long-term implications as well (Hodgdon, 2008). For those in the juvenile justice system, approximately 25 to 50% of adolescents have a substance use disorder (Hodgdon, 2008). The increase of crime has led to a

greater demand for juvenile and criminal justice services (Hodgdon, 2008). The reduction of substance use can be one important component in reducing crime rates as a result.

There is great need to prevent and reduce the use of alcohol and drug use among the adolescent population. Federal organizations such as National Institute of Drug Abuse (NIDA) and the Substance Abuse and Mental Health Services Administration (SAMHSA) have funded research projects aimed towards prevention of substance use for at risk adolescents. Researchers have developed programs aimed at altering the risk and protective factors for drug abuse that occurs in families, schools, and communities (NIH, 2014). One research-based program, "Preventing Drug Use among Children and Adolescents: A Research-Based Guide for Parents, Educators, and Community Leaders," has been shown to significantly reduce early use of substances (NIH, 2003). In general, substance use prevention programs reduce alcohol and drug use when properly implemented by schools and community (NIH, 2014). Some researchers in the resilience field have focused on protective factors that help prevent individuals from engaging in risk-taking behaviors (Taylor et al., 2003).

In the literature, there has been emphasis placed on the importance of significant relationships. The importance of mentoring by guiding and inspiring children in positive directions has been highlighted (Walsh, 2006). Ungar (2004) stated that this positive involvement is especially important in promoting resilience in high-risk youth. Positive results for risk reduction have emerged from preventive programs such as Big Brothers/Big Sisters for urban children at risk. Results demonstrate that for the youth involved, they are less likely to join gangs, use alcohol or drugs, and have higher academic performance (Walsh, 2006). One key to this program appears to be spending time together, engaging in activities and responsibilities

with a positive role-model. This finding highlights the importance of togetherness for at-risk youth.

Werner (1995) found that at-risk adolescents were more resilient when they could establish a close bond with at least one competent and emotionally stable person. This included a family member, teacher, mentor or neighbor who was aware of their needs, listened to them, challenged them, and rooted for them. This nurturing helped them to establish a basic sense of trust. In contrast, the other two thirds were considered less resilient. Less resilient youth were far more likely to have multiple delinquent charges (Werner, 1986). This group developed serious learning problems by age two or behavioral problems by age 10, or delinquency records, mental health problems, or pregnancies by age 18 (Werner, 1995). Overall, strong relationships in promoting resilience has been a consistent finding in the literature.

Other scholars have been more concerned with family influence in resilience. For example, Benard (2004) found that the greater the levels of caring relationships, high expectation beliefs, and meaningful participation in the family, the less likely adolescents are involved in risk behaviors such as binge-drinking, tobacco smoking and marijuana use. When parents provide guidance and structure such as parental regulation, monitoring, family management, and supervision this provides a safe environment for adolescents and promotes healthy development (Benard, 2004).

Meanwhile, some have researched individual characteristics associated with resilience. Personality traits such as openness, extraversion, and agreeableness have been found to promote resilience (Herrman et al., 2011). Also, internal locus of control, mastery, self-efficacy, self-esteem, cognitive appraisal (e.g. positive interpretation of events), optimism (Herrman et al.,

2011), and hardiness are individual characteristics that are associated with resilience (Bonanno, 2004).

While these factors have been found to be related to lower negative outcomes, it is important to continue to study resilience as involving complex processes of interrelated risk and protective factors at individual, family, and community levels. There is more need to explore mediating and moderating processes of resilience (Taylor et al., 2003). Cultural and gender differences deserve more focus in research to understand if resilience processes are relevant for both sexes and for different ethnic groups (Taylor et al., 2003). Exploring these differences may support intervention and prevention efforts for adolescents struggling with substance use. These findings may help families identify the influence of their parent-child relationships.

Purpose of the Study

This research will examine an at-risk adolescent population with involvement in the juvenile justice system and specifically will investigate gender-specific parent-child relationships. There has been a lack of research comparing gender differences and exploring differences in quality relationships between mothers and fathers with male and female adolescents (Hoeve, Dubas, Gerris, van der Laan, & Smeenk, 2011). These relationships will be studied to explore whether they are related to the reduction of high frequency and poly-substance use when adolescents are affiliated with negative peer groups. Studying these constructs will provide insight into the complexity of resilience processes and the need to be sensitive to the individual differences within adolescents' experiences.

Each adolescent's situation and specific needs should be considered to understand the resources needed. There are major individual differences in people's responses to similar experiences (Rutter, 2006) and there are many differences within families who are at risk for

substance abuse (Werner & Johnson, 1999). In research, this is important to consider, because each adolescent who is considered at-risk will have different interrelated risk and protective factors that influence his or her response. Similarly, it might be helpful to focus on what processes tend to foster resilience for certain people, which is the focus of this study. The information gathered from this study can support person-specific interventions.

This study should help guide future research for at-risk adolescents. The study sample is drawn from a population of high-risk adolescents who have a history of juvenile delinquency, including underage drug and or alcohol use and possession charges. The results should help us better understand gender-specific parent-child relationships that are protective for adolescents.

Core Concepts

Resilience

For the purpose of this study resilience is defined as the ability to cope with or overcome risk or adversity and display positive outcomes (McKnight & Loper, 2002). Historically, there was a deficit-based approach to understand maladaptive functioning, however this shifted to highlight the strengths and resources that promote functioning and positive outcomes (Fleming, & Ledogar, 2008). Overall, resilience theory identifies the importance of protective factors and competencies by addressing the protective factors that people and systems demonstrate that enable them to rise above adversity.

Numerous researchers have focused on a variety of areas that promote resilience. For instance, Anthony (1974) identified individual traits that promote resilience in what he called the "invulnerable child." Others labeled the resilient child as invincible (Werner & Smith, 1982). Rutter (1979) saw resilience as more of a process than a personal trait. Recently, researchers have been focused on resilience as a feature of entire communities and cultural groups (Fleming

& Ledogar, 2008). Additionally, researchers are focused on understanding biological and gene-environment influences, cross-cultural settings, the social construction of resilience, and protective factors for adolescents.

Relationship Quality

Relationship quality is related to the type of relationship that adolescents have with their mothers and fathers. This is defined as the parents' approval and emotional support that the adolescents receive, from the perspectives of the adolescents. Parenting practices and the parent-child relationship have been highlighted in the literature as being protective against risk-taking behaviors, such as substance abuse. Marshal and Chassin (2000) found that high levels of support from parents promote the development of higher levels of self-esteem and social skills of their adolescent, which fosters resilience when socially pressured to use substances (Marshal, & Chassin, 2000). These findings suggest that the quality of the parent-child relationship can play an important role in their children's substance use.

Overview of the Study

Quantitative research design was used for this secondary data analysis. A moderation model was implemented to investigate gender differences in relationship quality with mothers and fathers and the impact on substance use. I investigated how a quality relationship with parents can moderate the relationship between negative peer association and the adolescents' frequency and poly-substance use. Additionally, I investigated how gender can moderate the relationship between negative peer association and substance use. I investigated gender-specific relationship differences shown to be protective for adolescents with their mothers and fathers separately. Participants included youth who were referred by a juvenile justice court to be assessed by a doctor in the Department of Psychiatry and Behavioral Medicine at Carilion Clinic

in Roanoke, Virginia. These adolescents were referred for assessment due to problematic

substance use, which is related to law-breaking behaviors. Adolescents who completed

assessments were between the ages of 11 and 18. The sample for this study is made up of 166

adolescents.

Research Questions

The research questions below will be investigated in this study.

1. Does the association between relationship quality with mother/father and frequency of
   substance use differ for male and female adolescents?

2. Does the association between relationship quality with mother/father and poly-substance
   use differ for male and female adolescents?

3. Does a higher quality relationship with mother/father moderate the association between
   negative peer groups and adolescents' frequency of substance use?

4. Does a higher quality relationship with mother/father moderate the association between
   negative peer groups and adolescents' poly-substance use?

5. Does the association between negative peer groups and frequency/poly-substance use
   vary by gender?

For research questions one and two, I hypothesized that higher quality relationships

would be associated with lower rates of frequency and poly-substance use among adolescents. I

believed that this difference would have higher significance for female adolescents. This

hypothesis was supported by Marshal and Chassin's (2000) research where they found that

having a higher quality parent-child relationship, parental support, and consistency in discipline

were protective factors specifically for adolescent girls. See Appendix A for a conceptual map of

research questions one and two. Also, I hypothesized that there would be gender-specific

differences in relationship quality with mother and father that are more protective and be associated with lower frequency and poly-substance use.

Additionally, for the third and fourth research questions I hypothesized that a higher quality relationship with parents (mother or father) would protect against the effect of negative peer association on frequency and poly-substance use. Abar, Jackson, and Wood (2014) found that higher relationship quality has been associated with weakening the risk of negative influences as well as fostering positive influences. See Appendix B for a conceptual map of research questions three and four.

For the fifth research question, I predicted that gender would moderate the association between negative peer groups and frequency/poly-substance use. I predicted male adolescents will have higher associations between negative peer groups and substance use. Previous findings suggest that males have higher rates and are more likely than females to use most types of illicit drugs (SAMHSA, 2014). See Appendix C for a conceptual map of research question 5. I used hierarchical logistic regression to investigate all the above research questions.

<center>**Chapter 2: Literature Review**</center>

Adolescence is a developmentally important time where independence grows, risks are taken, and some begin to experiment with substances (Burrow-Sanchez, 2006). Experimentation at this age is associated with substance use (Burrow-Sanchez, 2006). Not all adolescents who experiment with substances develop substance use problems; however, some do develop problems that significantly impact their development and well-being in adulthood (Burrow-Sanchez, 2006). This highlights the importance of investigating protective factors more in-depth for this population and to explore the protective strength of specific relationships that might differ.

Prevalence of Substance Use

The Monitoring the Future survey completed by National Institute of Drug Abuse (NIDA) revealed that drug use and attitudes among 8th, 10th, and 12th graders have been changing in recent years (NIH, 2016). Substance use has been declining or maintaining constant (NIH, 2016). While these results are promising, at some point most adolescents are exposed to drugs and alcohol (Burrow-Sanchez, 2006). Alcohol and marijuana are shown to have the higher rates of use among 12th graders during this past year (NIH, 2016).

Chung and Martin (2011) stated that adolescent experimentation with substances, such as alcohol and tobacco, may be considered developmentally normative. The prevalence of substance use increases from ages twelve and twenty-one (Johnston et al., 2009). In terms of alcohol use, adolescents tend to engage in risky drinking patterns referred to as episodic heavy drinking (Miller et al., 2007). Episodic heavy drinking is referred to as consuming five or more drinks in a row (Miller et al., 2007), however, over the past decade the prevalence has slowly declined (Johnston et al., 2009). Criteria for substance abuse include psychosocial consequences

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(e.g., school grades are affected, issues with interpersonal relationships, substance-related legal issues) and hazardous substance use (e.g., driving while intoxicated) (Chung, & Martin, 2011). Overall, for those adolescents who report as using alcohol or drugs in the past year are suggested to have additional screening to identify risk (Levy, Winters, & Knight, 2011).

Substance use is more alarming among juvenile delinquents due to higher rates of use. Approximately 78% of adolescents who are arrested also use drugs or alcohol (National Center on Addiction and Substance Abuse, 2004). McClelland, Teplin, and Abram (2004) found similar results (77%) among 1,829 juvenile detainees who reported using substances within the past six months. Delinquency and drug use are found to be the biggest and most problematic behaviors during adolescence (Mann, 2003).

Risk Factors: Substance Use

Risk factors can be described as something that could hinder normal functioning and can potentially lead to distress and harmful outcomes (Johnson & Wiechelt, 2004). Society's most costly behavior is related to drug use (Taylor et al., 2003). Substance use is more likely to occur among youth who exhibit less insight, independence, and morality as well as for youth who have substance abusing peers and family (Taylor et al., 2003). Drug use has been found to be problematic among teens, but more so for delinquent teens because they are more likely to use and abuse illicit substances (Taylor et al., 2003). Further, the lack of resistance to substance use is likely for detained adolescents because they have fewer personal resources (i.e. less self-efficacy, achievement, self-esteem, feelings of helplessness), show less interest in attachment to others, demonstrate less independence, and manifest an inability to appropriately take responsibility (Taylor et al., 2003).

Influential risk factors related to adolescents' vulnerability to substance use have been identified (NIH, 2014). These risk factors include environmental and individual factors. The most influential contextual factors are current drug laws and availability; however, other important factors to consider are poverty, neighborhoods, and cultural norms about drug use (Burrow-Sanchez, 2006). Environmental factors such as parents or older family members who abuse substances or are involved in criminal activity, can increase risks for children to have drug problems (NIH, 2014). Friends and acquaintances can also be strong influences during teen years by encouraging their peers to experiment (NIH, 2014). Further, academic failure and poor social skills can put adolescents at increased risk (NIH, 2014). Individual risk factors such as genetics account for forty to sixty percent of an individual's vulnerability to addiction (NIH, 2014).

The phase in the adolescents' life course can also place them at risk. In a study investigating risks of substance abuse among African American children, researchers found that for girls, risk of use increased during the transition into early adolescence (Ge, Jin, Natsuaki, Gibbons, Brody, Cutrona, & Simons, 2006). During this transitional period, children had more favorable images of substance users and had greater intentions and desire to use substances, which led to an increased number of adolescents and their friends using substances (Ge et al., 2006). These changes were more likely to occur for girls who matured early (Ge et al., 2006). Additionally, there was an interaction between early physical maturity and substance use among peers, which increased risk for substance use. These results highlight how the transition between childhood and adulthood and the developmental shifts during this time can put adolescents in a more vulnerable position.

Similar to the previous findings regarding the developmental stage of adolescents, Barnes, Welte, Hoffman, and Dintcheff (2005) explored the impulsivity of adolescents and how

impulsivity put them at greater risk for substance use and misuse. They found that impulsivity significantly predicted alcohol misuse for females and delinquency for males. Additionally, they found that peer delinquency was a major influence in youth problem behaviors, suggesting that impulsivity and peer delinquency during adolescence increases adolescent risk for substance use and risky behavior. Further, Mason and Spoth (2011) describe thrill-seeking as a strong predictor for substance use during adolescence. Thrill-seeking and impulsivity are influenced by abnormal development in the brain. Substance use disrupts normal brain development including critical thinking and impulse control (De Bellis et al., 2005; Zeigler et al. 2005). Substance use and abuse increases the vulnerability of adolescents due to their lack of impulse control.

Substance use-delinquency link. Consistent findings reveal the link between substance abuse and delinquency (Childs, Dembo, Belenko, Wareham, & Schmeidler, 2011). However, this association varies based on criminal history, age, gender, and race (Barnes, Welte, & Hoffman, 2002; Dembo, Wareham, & Schmeidler, 2007; & Teplin et al., 2005). This association also varies based on the type of substance the adolescent is using (Teplin, Mericle, McClelland, & Abram, 2003; Wei, Makkai, & McGregor, 2003).

Several researchers have found that white juvenile offenders reported using a variety of different substances at higher levels (e.g. Belenko et al., 2004; LeBeau-Craven et al., 2003; Teplin et al., 2005; & Vaughn, Wallace, Davis, Fernandes, Howard, 2008). Also, there is evidence that the likelihood of engaging in substance use and delinquent behavior increases as a teen moves through adolescence (Menard, Mihalic, & Huizinga, 2001). For example, Tubman, Gil, and Wagner (2004) studied 5,045 teens and found that delinquency and substance use increased from early to late adolescence. Additionally, there is more risk for higher levels of use with more serious substances among more serious offenders (Childs et al., 2011). Non-substance

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users tend to be the least involved in the justice system. Childs and colleagues (2011) reflect their findings that the involvement in one behavior is strongly associated to the extent of involvement in the other. Hence, the link between substance use and delinquency is remarkably noticeable and has caught the attention of many scholars to investigate these contributing factors more closely.

Peer relationships. Across all ethnic groups, peer influence has been found to be a strong predictor of drug use among adolescents (Bahr, Hoffmann,&Yang, 2005; Reinherz, Giaconia, Carmola Hauf, Wasserman, & Paradis, 2000). Adolescents associated with peers who engage in risky behaviors are more likely to also engage in such behaviors, including substance use (Beauvais & Oetting, 2002; Gil, Vega, & Turner, 2002). Simkin (2002), found that adolescents who are associated with peers who use substances and experience rejection and isolation from peers can contribute to the initiation of substance use.

Interestingly, van Ryzin and colleagues (2012) found that peers have less of an influence on substance use during the high school years. Additionally, peers were found to have a greater impact on substance use before and after high school for alcohol, tobacco, and marijuana (van Ryzin, Fosco, & Dishion, 2012). However, peers continue to be highlighted as being one of the most significant risk factors for substance use and other high-risk behaviors (Chein et al., 2011), This supports the use of negative peer association as a risk factor and a predictor for substance use.

Substance use-gender link. The association between gender and substance use is complex (Childs et al., 2011). Several studies reveal higher levels of marijuana use among male juvenile offenders compared to their female counterparts (Barnes et al., 2002; Dembo et al., 2007; Teplin et al., 2003; Wei, Makkai, & McGregor, 2003). Meanwhile, female offenders have

reported earlier initiation and higher levels of use of harder drugs such as cocaine and amphetamines (Kim & Fendrich, 2002; Neff & Waite, 2007; Teplin et al., 2003; Wei et al., 2003). Overall, males have been seen to have higher rates and are more likely than females to use most types of illicit drugs (SAMHSA, 2014).

       Parent-child relationship & gender. Parenting practices, age, and gender have all been found to be influential in adolescent substance use and delinquency (Fagan, Van Horn, Antaramian, & Hawkins, 2011). One study found that family risk such as less supervision, monitoring, more family conflict, and weak parent-child attachment were associated with greater involvement in drug use and delinquency (Fagan, Van Horn, Antaramian, & Hawkins, 2011). This relationship was found for both girls and boys. In this study, girls reported more parental monitoring and higher attachment to mothers. They also experienced more family conflict and less attachment to father (Fagan et al., 2011).

Resilience & Protective Factors

       Research on resilience has focused on protective factors that help prevent individuals from engaging in risk-taking behaviors (Taylor et al., 2003)**.** Protective factors decrease the likelihood that an individual will use or develop problems with drugs and/or alcohol (Burrow-Sanchez, 2006). There are numerous individual and environmental factors that are considered protective. For example, personal factors that have been studied include personality traits (e.g. openness, extraversion, agreeableness), internal locus of control, mastery, self-efficacy, self-esteem, cognitive appraisal (e.g. positive interpretation of events), and optimism (Herrman et al., 2011). Another protective factor is hardiness. Hardiness is described as finding purpose in life, the belief that an individual can influence his or her surroundings and the outcome of events, and the belief that one can learn and grow from both positive and negative life events (Bonanno,

2004). Hardy individuals are able to use active forms of coping to seek social support to deal with problems (Bonanno, 2004).

Person-focused approaches differentiate resilient children from various profiles and find patterns of good versus poor adaptive functioning (Masten, 2001). An example of research using a person-focused approach is from Werner and Smith's (1982) longitudinal study of children in Kauai, Hawaii. Children who were part of this study were exposed to four or more risk factors including chronic poverty, parental divorce or psychopathology, perinatal stress, and low maternal education. They found that one third of the children were able to overcome adversity as they grew older (Werner, 1995). Various child, family, and community factors were related to the positive outcomes in adulthood. They experienced better parenting, had more positive self-perception, and greater conscientiousness. During adolescence, they exhibited communication and problem solving skills, found strategies for coping, had faith that their own actions could make a positive difference in their lives, and had a talent or hobby that was valued (Werner, 1995). Most importantly, they were able to establish a close bond with at least one competent and emotionally stable person. This included either an extended family member, teacher, mentor or neighbor who was aware of their needs, listened to them, challenged them, and rooted for them. This nurturing helped them to establish a basic sense of trust. In contrast, the other two thirds were considered less resilient. Less resilient youth were far more likely to have multiple delinquent charges (Werner, 1986). This group developed serious learning problems by age two or behavioral problems by age 10, or delinquency records, mental health problems, or pregnancies by age 18 (Werner, 1995).

In environmental-systemic studies, social support (e.g. relationships with family and peers) has been found to be associated with resilience for individuals (Herrman et al., 2011).

Family stability, good parenting skills, secure attachment to mom, secure relationship with a non-abusive parent, and absence of maternal depression or substance abuse were found to be associated with fewer behavioral problems and better psychological well-being (Herrman et al., 2011). Social support (e.g. positive peers, supportive teachers, and other adults) and community factors (e.g. good schools), community services, and cultural factors (e.g. spirituality and religion) and lack of exposure to violence were found to contribute to resilience (Herrman et al., 2011). Feldman and Burzette (2004) investigated individuals transitioning from adolescence into adulthood who have experienced traumatic events in their childhood. The researchers found that family was the most important source of support which reduced risk for behavioral problems in early adulthood (Feldman & Burzette, 2004).

The Center for Substance Abuse Prevention's National Cross-Site Evaluation of High-Risk Youth Programs (Sale & Springer, 2001) conducted a 5-year study assessing 48 sites and found that stronger bonding with school and family showed the greatest associations of reduced substance use for at-risk youth. These findings highlight the importance of the interaction of environmental-systemic factors that promote resilience.

In the literature, there has been emphasis placed on the importance of significant relationships. The importance of mentoring by guiding and inspiring children in positive directions has been underscored (Walsh, 2006). Ungar (2004) stated that this positive involvement is especially important in promoting resilience of high-risk youth. Significant results have emerged from preventive programs such as Big Brothers/Big Sisters for urban children at risk. Results demonstrate that for the youth involved, they are less likely to join gangs, use alcohol or drugs, and have higher academic performance (Walsh, 2006). The key to

this program is spending time together, engaging in activities and responsibilities with a positive role-model.

Adolescents who live in a stable environment, have a strong parent-child relationship with effective communication, consistent supervision and discipline, and receive strong messages against substance use decrease the risk of substance abuse among adolescents (Walker, Mason, & Cheung, 2006). There continues to be support for the importance of the parent-child relationship as an important protective factor that reduces risk for substance use. This evidence has been used as support to investigate protective parent-child relationships for at-risk adolescents in the present study.

There has been additional evidence in the literature that supports how family factors can contribute to adolescents' outcomes and well-being. One study found that adverse adolescent outcomes are associated with the lack of caring parent-adolescent relationships and poor parental regulation or family management (Benard, 2004). Having a close relationship was found to be protective against alcohol, tobacco, and other drug use. The best and most effective way to promote resilience is to foster it in the family care-givers first (Benard, 2004).

Relationship quality with parents. Although there are other factors that become increasingly influential during adolescence, such as peer groups, parents maintain much of the influence during this time (Burrow-Sanchez, 2006). Higher parent-child relationship quality has been associated with weakening the risk of negative influences as well as fostering positive influences (Abar, Jackson, & Wood, 2014). Relationship quality has included parental support and involvement, closeness, conflict experienced, and the degree of mutual trust felt (Abar, Jackson, & Wood, 2014).

One study found that higher levels of parent-child communication influenced lower levels of externalizing symptoms (Davidson, & Cardemil, 2009). Parents who provide high levels of support promote the development of high levels of self-esteem and social skills of their adolescent, which fosters resilience when socially pressured to use substances (Marshal, & Chassin, 2000). In contrast, when parental support is low, adolescents are more likely to give into peer pressures (Marshal, & Chassin, 2000). Those who have higher consistency of discipline are more resilient to peer influences and are more likely to stick by parental norms and values (Marshal, & Chassin, 2000). Furthermore, higher levels of parental monitoring are associated with lower rates of alcohol and other drug use and perceived parental monitoring is a protective factor in terms of lifetime substance use (Shillington, Lehman, Clapp, Hovell, Sipan, & Blumberg, 2005). These findings suggest that parenting plays an important role in their children's substance use. Marshal and Chassin (2000) suggested that family prevention-intervention programs target parental support and discipline as it has been found to protect against peer affiliations, which have been found to promote substance use.

Values were tested to determine if the association with alcohol initiation could be determined by alcohol resistance self-efficacy and alcohol expectancies (Shih, Miles, Tucker, Zhou, & D'Amico, 2012). Higher parental respect among adolescents was associated with lower likelihood of initiating alcohol use, which was partially explained for by alcohol resistance self-efficacy and alcohol expectancies (Shih et al., 2012). Additionally, adolescents 12 to 17 years old who were found to be less likely to use drugs had also perceived their parents would strongly disapprove substance use (SAMHSA, 2003).

Benard's resilience framework (2004) demonstrates that the greater the levels of caring relationships, high expectation beliefs, and meaningful participation in the family, the less likely

adolescents are involved in risk behaviors such as binge-drinking, tobacco smoking and marijuana use. Additionally, providing clear expectations such as guidance and structure can meet the needs for safety for adolescents (Benard, 2004). Specifically, providing parental regulation, monitoring, family management, and supervision assists adolescents in healthy development (Benard, 2004). Overall, strong relationships in promoting resilience has been a consistent finding in the literature.

Parent-child relationship & gender. While the protective power of parent-child relationships is known, it would be beneficial to add to the literature knowledge regarding specific relationships based on gender of parent and child. In one study examining the role of parental support and discipline in the influence of peer pressure of alcohol use among adolescents, Marshal and Chassin (2000) found that having a higher quality parent-child relationship, parental support, and consistency in discipline were protective factors specifically for adolescent girls.

Wang and colleagues (2011) completed a study consisting of 1,000 adolescents. They found that boys had a greater increase of substance use and antisocial behavior when they were from single-parent families. Also, they found that parent knowledge (i.e. monitoring, tracking whereabouts, and activities) served as a stronger protective factor for boys compared to girls (Wang, Sishion, Stormshak, & Willett, 2011). In comparison, Abar, Jackson, and Wood (2014) analyzed data from 5,419 adolescents and found that perceived parental knowledge was associated lower levels of risk for both male and female adolescents. Although there have been mixed findings, it appears that when parents seek out information regarding the behaviors and activities of their children, this involvement is potentially protective for all adolescents.

Another study consisted of 179 sixth graders who were followed through eighth grade (Fosco, Stormshak, Dishion, & Winter, 2012). They found that parental monitoring and father-child connectedness were associated with lower levels of problem behaviors over time (Fosco et al., 2012). They did not find associations for mother-child connectedness. Overall, these findings did not differ for boys or girls (Fosco et al., 2012).

Theoretical Framework

A wide-range of theories have been used to conceptualize risk and protective factors for substance abusing adolescents. Resilience theory and research have been used to understand processes that promote resilience among adolescents (Werner, & Johnson, 1999). For this study, I used resilience theory to support my investigation and the inspiration behind the conceptualization of this study and the development of my research questions.

Resilience Theory

The importance of protective factors and competencies have been highlighted in resilience research by addressing the strengths that people and systems that help people rise above adversity (Masten, 2001). There have been three main types of models used to explore how resilience factors work to prevent the trajectory from risk exposure to negative outcomes. These types of models include compensatory, protective or immunity, and challenge (Walsh, 2006). The compensatory model are the personal characteristics and environmental resources that counteract direction to a risk factor. Protective or immunity models consist of protective factors that reduce the effects of a risk on a negative outcome. Lastly, challenge models consist of the idea that moderate exposure to risk factors or stressors can become potential enhancers of competence and resilience. In general, these models have been used by researchers to further

investigate vulnerability and protective mechanisms. Walsh's family resilience model (1996) can be used for a systemic lens on resilience.

Family Resilience Framework. There has been a significant amount of focus on the influence of significant relationships with caring adults and mentors who have supported the efforts of at-risk children. These adults believed in their potential and encouraged them to make the most of their lives. Although these relationships have been found to be meaningful, there are other resources that could be found to strengthen family relational networks (Walsh, 2002). In the family resilience framework, there are key processes that are seen as being able to reduce stress and vulnerability in high-risk situations. Elements of this framework have supported the development of this study. For instance, there are three domains of family functioning which include (a) belief systems (making meaning of adversity, positive outlook, and transcendence of spirituality), (b) organizational patterns (flexibility, connectedness, social and economic resources), and (c) communication (clarity, open-emotional expression, collaborative problem solving) (Walsh, 2003b). Aspects of the organizational patterns, such as connectedness was used to support the investigation of relationship quality with parents as a protective factor for adolescents.

A family resilience perspective does not entertain the deficit view of families. It does not view the family as damaged and beyond repair, but rather challenged by life's adversities (Walsh, 2002). Families can emerge stronger, more resourceful and with new insights if they are able to tap into resilience processes (Walsh, 2003b). Family resilience in this framework is seen as the "ability to struggle well, surmount obstacles, and go on to live and love fully" (Walsh, 2003a, pp. 1). The advantage of this approach is that it focuses on the strengths that emerge while overcoming adversity, assumes no single model fits all families or situations, and that

processes for ideal functioning and well-being of family members are seen to vary over time (Walsh, 2003b).

This perspective helps families to respect and have compassion for their struggles, which affirms their potential in hopes of bringing out their best (Walsh, 2002). The hope is that families can find their own pathways to resilience that fit with their cultural orientation and personal strengths and resources (Walsh, 2003b). Resilience is not viewed as bouncing back, but rather bouncing forward. Families can view their situations as experiences to be learned from and seize possible opportunities (Walsh, 2006). They can come out of a crisis stronger with having had the opportunity to grow and develop new competencies (Walsh, 2002).

Walsh's family resilience framework is a strength-based perspective that focuses on individual, family and community strengths (e.g. competencies, resources, personal characteristics). Interestingly, most people do well despite exposure to adversity (Masten, 2001). Some findings demonstrate that 45 to 87 percent of individuals who misuse substances in adolescence discontinue in adulthood (Larm et al., 2010). However, the greater the number of problems during adolescence such as substance misuse and conduct problems, the less likely that resilience will emerge during adulthood (Larm et al., 2010).

Summary

It is important to learn about what helps adolescents overcome adversity. This wealth of knowledge can help support and prevent adolescents from turning substance abuse and risk-taking behaviors into a life-long trajectory with more severe negative outcomes. The advancement of research is important to promote resilience among adolescents who are at-risk for alcohol use and abuse. Drug and alcohol use and abuse have many negative outcomes, which

includes risk-taking behaviors, and negative effects related to physical, emotional, and social well-being.

In general, adolescents who have higher levels of family involvement including parental support, consistency of discipline, and monitoring are less likely to use substances and are more resilient to social pressures (Marshal, & Chassin, 2000). The goal of this literature review was to identify the aspects that put adolescents at risk for or resilient to drug and alcohol use and abuse. For this study, I focused on the protective nature of a quality parent-child relationship and how these relationships with mother and father differ based on the gender of the adolescent. I explored how this relationship can moderate the effect of negative peer association on frequency and poly-substance use of adolescents.

Chapter 3: Method

Overview of the Research Design

This study included secondary data analysis of data from the Adolescent Drug & Alcohol Diagnostic [ADAD] (Friedman & Utada, 1989) provided by Carilion Clinic. Specifically, I used quantitative methodology to explore the extent to which the quality of the parental relationship with adolescents relates to the frequency of and types of substances used when at-risk adolescents have negative peer associations. Negative peer association was the identified predictor variable. This variable includes close peers who have been in trouble with the police, used drugs or alcohol regularly, quit school before graduating, and got in trouble at school. I investigated parental emotional support and approval to explore the quality of the relationship between parent and adolescent. Further, gender was a moderator to explore the differences in protective relationships based on the parents' and children's gender.

The following research questions and hypotheses were investigated in this study. The first two research questions are as follows, 1) Does the association between relationship quality with mother/father and frequency of substance use differ for male and female adolescents? and 2) Does the association between relationship quality with mother/father and poly-substance use differ for male and female adolescents? I hypothesized that higher quality relationships would be associated with lower rates of frequency and poly-substance use among adolescents. I believed that this difference would have a higher significance for female adolescents. Also, I hypothesized that there would be gender-specific differences in relationship quality with mother and father that are more protective and be associated with lower frequency and poly-substance use.

The third and fourth research questions include, 3) Does a higher quality relationship with mother/father moderate the association between negative peer groups and adolescents'

frequency of substance use? and 4) Does a higher quality relationship with mother/father moderate the association between negative peer groups and adolescents' poly-substance use? I hypothesized that a higher quality relationship with parents (mother or father) would be a protective factor against the effect of negative peer association on the frequency of substance use. Lastly, I tested the following research question, 5) Does the association between negative peer groups and frequency/poly-substance use vary by gender? I predicted that gender would moderate the association between negative peer groups and frequency/poly-substance use. I predict male adolescents will have higher associations between negative peer groups and substance use.

Sample

Participants included adolescents who were referred for assessment from the 23rd Court Service Unit for Roanoke County and Salem City in Virginia. The adolescents were assessed for potential problematic substance use. They were under court supervision at the time of assessment. The majority of adolescents who were referred, followed through and completed the assessment. These participants ranged between the ages of 11 and 18 years old. The convenience sampling approach (Miller, 2007) was used to access this at-risk population of adolescents. This sample was of interest due to their involvement in the juvenile justice system. Consistent findings in the literature reveal a strong link between substance abuse and delinquency (Childs, Dembo, Belenko, Wareham, & Schmeidler, 2011); therefore, this sample was used to further explore protective factors for an at-risk sample. Data were collected by Dr. Cheri Hartman at Carilion Clinic in Roanoke, Virginia and surrounding areas. There were a total of 166 participants in the sample, which consisted of 42 females and 124 males.

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All participants were within the inclusion criteria for age, between eleven and eighteen years old. Other inclusion criteria included adolescents who were involved in the juvenile court system, which identifies them as being at-risk teens. Exclusion criteria included participants who were over the age of eighteen and under the age of eleven.

G*Power was used to examine statistical power for analysis (Howell, 2010). To establish an adequate effect size with a strong statistical power of .8, a sample size of 126 was required. Because the sample consisted of a sample size of 166 participants, the requirements to establish statistical power were met.

Procedures

Data were collected through assessments conducted by Dr. Cheryl Hartman at Carilion Clinic in Roanoke, Virginia. I gained access to the data collected following Institution Review Board (IRB) approval from Virginia Tech. Participants solely had contact with Dr. Hartman. This study is a secondary data analysis and therefore, the informed consent process of participants was conducted through the Carilion Clinic.

Following a referral to Dr. Hartman to assess at-risk adolescents, adolescents and their parents or guardian consented to the assessment. Following the informed consent process, Dr. Hartman met with both the adolescent and parent/guardian to explain the ADAD (Friedman & Utada, 1989) screening, confidentiality rights, purpose of the assessment, the written report for the court, and the need for their signature of approval of the report before submitting it to the court.

Adolescents completed the online version of the ADAD which was created by Dr. Mark Kilgus of Carilion Clinic. This was completed in a private setting. The process took approximately forty-five to sixty minutes to complete. Dr. Hartman met with the adolescents

individually to get clarification on their responses and to complete a suicidality screen. Additionally, Dr. Hartman interviewed the adolescent's parent/guardian to gather additional information. The results were reviewed with each adolescent during the second session. Participants were not compensated for their participation since the assessment was ordered by the juvenile court system.

Measurement

The online version of the ADAD created by Dr. Mark Kilgus was administered to the referred adolescents. The ADAD is an evidence-based, retrospective survey. Friedman and Utada (1989) created this 150-item assessment, which yields composite scores on drug and alcohol use along with seven other areas. It is a multidimensional structured interview that assesses medical, school, employment, social life and relationships, family relationships, psychological, delinquent and criminal activity, and drug and alcohol use.

The ADAD assessment is administered by an interviewer and it provides an evaluation of the nine problem areas by giving a 10-point severity rating ranging from 0 (i.e., there is no problem) to 9 (i.e., the problem is extreme and treatment is needed). The interviewer uses a two-step method by calculating composite scores in each problem area and by using the Interviewer Severity Ratings to give a comprehensive adolescent life problem profile. The composite scores are based on the adolescent's reports of his/her own behavior as opposed to his/her attitudes, opinions, reactions, and judgements (Bolognini et al., 2001). This measure is not only used to assess substance use and other life problems, but it is also used to help with diagnostic, treatment planning and evaluation, and for conducting research in the field of adolescent drug abuse (Bolognini et al., 2001).

A series of tests were completed to assess the validity and reliability of the ADAD measure. Results were derived from the standardization sample, which consisted of 1,042 participants of outpatient programs (Friedman & Utada, 1989). Composite scores show good reliability (Chronbach's alpha between .91 and .99) (Friedman & Utada, 1989). Results indicate that there is adequate external validity (r between .43 and .67) (Friedman & Utada, 1989). Validity was determined by correlating with scores from other previously validated instruments that measured similar life problem areas, such as The Personal Experience Scale, The Texas Prevention Intervention Management and Evaluation System, Neuroticism Scale, Maudsley Personality Inventory, and Gunderson Drug Involvement Scale (Friedman & Utada, 1989).

For this study, variables were created to measure each construct of interest. Gender was a variable used to investigate differences in relationship quality with their mothers and fathers among male and female adolescents. Additionally, I created a variable to determine negative peer associations, quality of parent-child relationships, and frequency and poly-substance use. (See below for complete descriptions of these variables.)

Demographics. Participants were asked to answer various questions regarding their demographic information including age, gender, race and ethinicity (see Appendix D). Gender has been highlighted as a moderator in the present study. Dummy coding was used for this variable. Males were coded as "0" and females were coded as "1."

Negative peer association. Under the Social category on the ADAD, participants were asked to report on the following four questions: "Of your closest friends, how many (a) have been in trouble with the police? (b) use drugs or alcohol regularly? (c) have quit school before graduating? or (d) get in trouble at school?" See question three under the "Social" section in the ADAD measure found in Appendix D. Participants rated their responses using a scale including

the following responses: "None/Not at all, A little, A fair amount, or A lot." These results were recoded into a scale of 0 (None/Not at all) to 3 (A lot).

Internal consistency reliability was examined using Cronbach's Alpha. These results showed Cronbach's Alpha at .71. This is considered acceptable support for internal consistency (Morgan, Leech, Gloeckner, & Barrett, 2007). However, inter-item correlations reflected low correlations between items A (in trouble with police) and C (quit school) ($r = .17$) and items B (use drugs or alcohol) and C ($r = .23$). Due to these lower inter-item correlations, I removed item C (quit school). This change improved Cronbach's alpha slightly (.73) when including the items related to getting in trouble with the police (A), using drugs and alcohol (B), and getting in trouble at school (D).

Next, I created a composite score by adding the responses to create a single variable labeled "Negative Peer Association." Higher composite scores reflected peers getting in more trouble with the police, using more drugs and alcohol more regularly, and getting into more trouble at school. Scores ranged from zero to nine.

Relationship quality. Relationship quality was evaluated based on parental approval and emotional support. These variables were created by examining how another instrument, The Network of Relationships Questionnaire Manual (Furman & Buhrmester, 1985), included comparable items to test similar constructs. There are variations of this questionnaire, but for this study I referenced The Network of Relationships – Relationship Quality Version (The NRI-RQV). This is a 30-item survey and consists of 10 scales with 3 items per scale (Furman & Buhrmester, 1985). It assesses 5 positive (i.e. companionship, disclosure, emotional support, approval, and satisfaction) and 5 negative (i.e. conflict, criticism, pressure, exclusion, and dominance) features of a relationship (Furman & Buhrmester, 1985). Scoring is completed by

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averaging the three items in each scale. Scale scores can be derived from only two items in the scale. Reliability of this scale was evaluated from adolescents' perception of the emotional support and approval they received from their mothers and fathers. Scores are measured separately for mothers and fathers. The inter-item reliability for emotional support was .78 for mothers and .83 for fathers (Furman & Buhrmester, 1985). The inter-item reliability for approval from mothers was .72 and from fathers was .71 (Furman & Buhrmester, 1985).

The Network of Relationships – Relationship Quality Version (NRI-RQV) was used to support the creation of the variable for relationship quality between adolescents and their mothers and fathers (Furman & Buhrmester, 1985). The items that make up the emotional support variable in the NRI-RQV consists of support with personal problems, help, or sympathy received, and being cheered-up when feeling down (Furman & Buhrmester, 1985). The approval variable consists of receiving praise, approval for actions, and feeling the parent is proud of him or her (Furman & Buhrmester, 1985). These items were used to support the creation of the relationship quality variable which consisted of the following items found in the ADAD, (a) Is mother/father disappointed in you? (b) Is mother/father dissatisfied with your behavior and/or attitude? (c) How difficult do you find it to talk to your mother/father figure about things that bother you? (d) Does mother/father give you advice when you need it? These items relate to support and approval, because when framed in the opposite direction, they reflect parent's being satisfied with the adolescent and approving of their behavior and/or attitude. Additionally, the teen has the ability to turn to his or her parents for support by sharing what has bothered them. Lastly, the parents give their teen support by giving them advice. These items can be found in the ADAD measure in Appendix D. See questions 18, 19, 24a, 24i, and 24q under the "Family" section.

Participants responded by selecting either (a) None/Not at all, (b) A little, (c) A fair amount, or (d) A lot. These results were recoded into a relationship quality scale of 0 (None/Not at all) to 3 (A lot). The fourth question related to advice was reverse coded to reflect similarly to the other three questions. Internal consistency reliability was conducted using Cronbach's Alpha. These results showed Cronbach's Alpha at .45 for mothers and .31 for fathers. Due to the lower alpha scores, I removed the fourth question, related to parents giving advice to their teen when they need it. This improved alpha scores to .76 for mothers and .71 for fathers for the relationship quality variable. This is considered good support for internal consistency (Morgan, Leech, Gloeckner, & Barrett, 2007). However, inter-item correlations show that low correlations between the third question, difficulty talking to parents and parent disappointed in teen ($r = .41$ for mothers, $r = .33$ for fathers) and difficulty talking to parents and parents are dissatisfied with teen behavior and attitude ($r = .48$ for mothers, $r = .41$ for fathers). Upon removal of this item, alpha improved slightly to .78 for mothers and .76 for fathers.

I created a composite score called "relationship quality" by summing the scores of the two questions, (a) Is mother/father disappointed in you? (b) Is mother/father dissatisfied with your behavior and/or attitude? These variables were created separately for mothers ($M = 1.65$, $SD = 1.78$) and fathers ($M = 1.50$, $SD = 1.80$). For the relationship quality variable, lower scores reflect stronger relationships. The range for both variables was zero to six.

Finally, the item related to adolescents having a difficult time talking with parents was created into a separate variable due to lower inter-item corrections. However, in preliminary analyses to assess linearity in relationship between this item and the outcome variables, it was not found to be statistically significant. Therefore, the model was respecified to exclude this variable in testing the hypotheses.

Frequency of substance use. Frequency of substance use was determined by using the questions that ask, "How many times in the last 30 days did you drink/smoke/or use _____." I included the responses for the following substances: tobacco, alcohol, marijuana, stimulants (i.e. uppers, speed, amphetamines, crystal meth, ecstasy, Ritalin, or Adderall), cocaine or crack, tranquilizers or sedatives (i.e. depressants, downers, date rape drugs, Xanax, Klonopin, Ativan, or barbiturates), hallucinogens (i.e. LSD (acid), mushrooms, or PCP), steroids or growth hormones, inhalants (i.e. glue, paint, or gasoline), and opioids (i.e. heroin, morphine, oxycodone, fentanyl, methadone, Percocets, hydrocodone, Loratabs, or codeine). Participants rated their frequency of use from none (0 days) to 30 (30 days) for days of use within the past month. These items can be found in Appendix D under the "Alcohol and Drugs" section. Based on reports of substance use, the variable "Frequency of Use" was created by adding the sum of overall use across substances. Higher values represented higher frequency of substance use across substances ($M = 7.15$, $SD = 11.63$, Range = 37). Due to violations of assumptions, this variable was dichotomized into higher use and lower use ($M = .27$, $SD = .41$).

Poly-substance use. This variable was created based on the responses from the Frequency of Substance Use variable. If participants reported any type of use regardless of frequency for tobacco, alcohol, marijuana, stimulants, cocaine or crack, tranquilizers or sedatives, hallucinogens, steroids or growth hormones, inhalants, and opioids I entered a value of "1" for that substance. I then created a composite score to add the total number of types of substances used for the "Poly-Substance Use" variable. Higher values represented higher levels of poly-substance use ($M = .69$, $SD = .91$, Range = 3). Due to violations of assumptions, this variable was dichotomized into higher and lower poly-substance use ($M = .20$, $SD = .40$).

Data Analysis

      Preliminary analysis and regression assumptions. Preliminary analyses and

assumptions were tested using IBM SPSS Statistics 22. I checked that the assumptions were met

to conduct the hierarchical regression analysis. The first assumption checked was to determine

that there was normality of individual variables. Descriptive statistics and histograms were used

to observe skewness and kurtosis of individual variables to ensure statistics for skewness did not

exceed positive or negative three and kurtosis did not exceed positive or negative ten. All

individual variables fell within these limits. Next, multivariate normality was checked to verify

that residuals of prediction were normally and independently distributed. I checked this

assumption by running a regression analysis for all predictor and outcome variables.

Additionally, I selected a normal probability plot to see determine if the residuals were normally

distributed. The residuals were not normally distributed. Next, I evaluated the assumptions of

linearity between predictor and outcome variables and homoscedasiticity by using scatterplots

and regression analysis. There were violations to the assumptions of multivariate normality and

linearity; therefore, I performed data transformations to the outcome variables by dichotomizing

them. This method was used due to the residuals not being normally distributed. In logistic

regression, there is no assumption that the data should be normally distributed (Leech, Barrett, &

Morgan, 2008). Therefore, the outcome variables were dichotomized to create two categories

including lower and higher frequency and poly-substance use.

      Due to the transformation of outcome variables, different assumptions needed to be met

which coincide with logistic regression. There are no distributional assumptions that need to be

met (Leech, Barrett, & Morgan, 2008). However, observations must be independent and

independent variables must be linearly related to the dependent variable (Leech, Barrett, &

Morgan, 2008). I ensured this by creating a probability plot and observed that the residuals were normally distributed. Additionally, linearity was determined by using regression analysis. Some variables did not meet the assumption of linearity; however, they were still included to test the hypotheses to compare differences. Additionally, the model was respecified to exclude the individual item that was created into a variable to reflect difficulty talking to parents about what bothers the adolescents. This variable did not show a linear relationship with frequency or poly-substance use. (See Table 10).

Descriptive statistics and histograms were used to detect outliers and missing data. Missing data and answers of "Does not apply" were excluded from the analyses. For relationship quality with mother, results showed no more than three "Does not apply" responses. For fathers, there were no more than nineteen "Does not apply" answers and seven missing responses. Both missing data and responses including "Does not apply" were coded as system missing.

Predictor and moderator variables were transformed into standardized z-scores (Howell, 2010), except for gender. I did this to create a meaningful zero so one variable does not have a greater weight over the other. Next interaction terms were created using the newly standardized variables. These terms were computed by multiplying the predictor and moderator variables. These interaction terms were used to test moderation. Overall, there were five interaction terms created, which included 1) gender*relationship quality with mother, 2) gender*relationship quality with father, 3) negative peer association*relationship quality with mother, 4) negative peer association*relationship quality with father, and 5) gender*negative peer association.

Hierarchical logistic regression analysis. Hierarchical logistic regression was used to test research questions and moderation. I first evaluated how well the model fit the data by evaluating chi-square and classification tables. I entered covariates including age, race, and

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ethnicity along with the other main predictors into the first block. The interaction terms were entered into the next block to determine if the moderators accounted for more variance. The Omnibus Tests of Model was observed. This table gave information regarding the significance of the model when all predictors were together (Leech, Barrett, & Morgan, 2008). The Omnibus Tests of Model table for Model 1 and Model 2 were compared to determine if the interaction term 1) was significant in predicting the outcome variable and 2) improved the overall model. If significance was determined, then data were evaluated for meaningful relationships among the variables. I evaluated the Model Summary and the Classification Table. The Model Summary table provided information of the approximate variance accounted for by the predictors and the Classification Table included percentages of accurately predicting the participants who have higher levels of substance use versus those with lower levels of substance use (Leech, Barrett, & Morgan, 2008). Lastly, the table, Variables in the Equation, was interpreted for significant predictors when all variables were considered together (Leech, Barrett, & Morgan, 2008).

Research Question 1 - Model 1. First, demographic variables were controlled for by being entered into the model. These included age and race and ethnicity. Next gender and relationship quality with mothers was entered into the same block. This same step was used separately for gender and relationship quality with fathers. The logistic regression equations are as follows:

- (Frequency of Substance Use)' = A + b (age) + b (race/ethnicity) + b (gender) + b (relationship quality with mother)

- (Frequency of Substance Use)' = A + b (age) + b (race/ethnicity) + b (gender) + b (relationship quality with father)

Research Question 1 - Model 2. Next, the interaction term, gender*relationship quality, was entered into the next block. This term was used to test the gender difference between male and female adolescents in the relationship between relationship quality with parent and frequency of substance use. This was tested separately for relationship quality with mothers and relationship quality with fathers.

- (Frequency of Substance Use)' = A + b (gender*relationship quality with mother) + [b (age) + b (race/ethnicity) + b (gender) + b (relationship quality with mother)]

- (Frequency of Substance Use)' = A + b (gender*relationship quality with father) + [b (age) + b (race/ethnicity) + b (gender) + b (relationship quality with father)]

Research Question 2 - Model 1. The next analysis was to test a similar model as research question 1, but with the outcome variable of poly-substance use. Control variables were entered into the first model along with gender and relationship quality. This was completed separately for relationship quality with mothers and relationship quality with fathers.

- (Poly-Substance Use)' = A + b (age) + b (race/ethnicity) + b (gender) + b (relationship quality with mother)

- (Poly-Substance Use)' = A + b (age) + b (race/ethnicity) + b (gender) + b (relationship quality with father)

Research Question 2 - Model 2. Next, the interaction term, gender*relationship quality, was entered into the next step. This interaction term was used to test the gender difference between male and female adolescents in the relationship between relationship quality with parent and poly-substance use. Separate tests were run for relationship quality with mothers and relationship quality with fathers.

- (Poly-Substance Use)' = A + b (gender*relationship quality with mother) + [b (age) + b (race/ethnicity) + b (gender) + b (relationship quality with mother)]

- (Poly-Substance Use)' = A + b (gender*relationship quality with father) + [b (age) + b (race/ethnicity) + b (gender) + b (relationship quality with father)]

Research Question 3 - Model 1. To test the third research question, control variables were entered into the first block along with negative peer association and relationship quality with parent. Separate analyses took place for relationship quality with mothers and fathers. Frequency of substance use was entered as the outcome variable.

- (Frequency of Substance Use)' = A + b (age) + b (race/ethnicity) + b (negative peer association) + b (relationship quality with mother)

- (Frequency of Substance Use)' = A + b (age) + b (race/ethnicity) + b (negative peer association) + b (relationship quality with father)

Research Question 3 - Model 2. In the next step, the interaction term, negative peer association*relationship quality, was entered. This was entered in the subsequent model to test the moderation of relationship quality with parents. I was most interested in investigating how higher relationship quality could moderate the association between negative peer association and frequency of substance use.

- (Frequency of Substance Use)' = A + b (negative peer association*relationship quality with mother) + [b (age) + b (race/ethnicity) + b (negative peer association) + b (relationship quality with mother)]

- (Frequency of Substance Use)' = A + b (negative peer association*relationship quality with father) + [b (age) + b (race/ethnicity) + b (negative peer association) + b (relationship quality with father)]

Research Question 4 - Model 1. The analysis for research question 4 was similar to the previous research question. However, this analysis included poly-substance use for the outcome variable. The control variables, negative peer association, and relationship quality with parent were entered into the first block. Similar to previous models, analysis for relationship quality with mothers and fathers were conducted separately.

- (Poly-Substance Use)' = A + b (age) + b (race/ethnicity) + b (negative peer association) + b (relationship quality with mother)

- (Poly-Substance Use)' = A + b (age) + b (race/ethnicity) + b (negative peer association) + b (relationship quality with father)

Research Question 4 - Model 2. In the next step, the interaction term, negative peer association*relationship quality with parent, was entered. This was used to test if relationship quality moderated the association between negative peer association and poly-substance use. The models below, demonstrate separate analyses for relationship quality with mothers and fathers.

- (Poly-Substance Use)' = A + b (negative peer association*relationship quality with mother) + [b (age) + b (race/ethnicity) + b (negative peer association) + b (relationship quality with mother)]

- (Poly-Substance Use)' = A + b (negative peer association*relationship quality with father) + [b (age) + b (race/ethnicity) + b (negative peer association) + b (relationship quality with father)]

Research Question 5 - Model 1. In the final analysis, I began by entering the control variables, gender, and negative peer association in the first step. This was completed separately for the two outcome variables, frequency of substance use and poly-substance use.

- (Frequency of Substance Use)' = A + b (age) + b (race/ethnicity) + b (gender) + b (negative peer association)

- (Poly-Substance Use)' = A + b (age) + b (race/ethnicity) + b (gender) + b (negative peer association)

Research Question 5 - Model 2. In the next step, the interaction term, gender*negative peer association, was entered to test whether gender moderated the relationship between negative peer association and substance use. This analysis was conducted separately for the different outcome variables.

- (Frequency of Substance Use)' = A + b (gender*negative peer association) + [b (age) + b (race/ethnicity) + b (gender) + b (negative peer association)]

- (Poly-Substance Use)' = A + b (gender*negative peer association) + [b (age) + b (race/ethnicity) + b (gender) + b (negative peer association)]

Chapter 4: Results

Descriptive Statistics

Descriptive statistics revealed that with a sample size of 166, female participants represented approximately 25 percent and male participants represented approximately 75 percent of the sample (see Table 1). Approximately 78 percent of participants reported being White ($n = 129$) and the remaining 22 percent identified as being Black, Hispanic/Latino, Asian/Pacific Islander, American Indian/Native Alaskan or Other (see Table 2). Additionally, a sizable portion (40%) of the sample was 15 years old or older (see Table 3). Approximately 40 percent of the participants were 15 or 16 years old and 53 percent were 17 or 18 years old. At the time of assessment, the majority of participants were enrolled in school (86%). For those who were not enrolled, fifteen participants had graduated and three dropped out of school (see Table 4).

Table 1

Gender of Participants

Gender	*n*	Percentage
Male	124	74.7%
Female	42	25.3%

Table 2

Racial and Ethnic Background of Participants

Ethnicity	*n*	Percentage
White	129	77.7%
Black	21	12.7%
Hispanic/Latino	5	3%
Asian/Pacific Islander	3	1%
American Indian/Native Alaskan	1	1%
Other	7	4.2%

Table 3

Age of Participants

Age	n	Percentage
11-12	2	1.2%
13-14	9	5.4%
15-16	67	40.4%
17-18	88	53%

Table 4

School Enrollment (N = 166)

Status	n	Percentage	Not Enrolled	n	Percentage
Enrolled	143	86%	Does Not Apply	146	88%
Not Enrolled	21	13%	Graduated	15	9%
Not Sure	2	1%	Home-schooled	2	1%
			Dropped Out	3	2%

Further demographic analyses on the parents of the adolescents were conducted. Descriptive statistics reveal that nine adolescents reported their biological fathers were deceased and seven were unsure if their biological fathers were still living (see Table 5). Additionally, one adolescent reported his or her biological mother was deceased and another adolescent reported that he or she was unsure if his or her biological mother was still living (see Table 5). Table 6 shows the living arrangements of participants. This table highlights transitions that have occurred for these adolescents, which might influence how they responded to the questions related to relationship quality with mothers and fathers.

Table 5

Frequency of Living and Deceased Biological Parents (n = 166)

	Mother (n)	Father (n)
Deceased	1	9
Not Sure	1	7
Living	164	150

Table 6

Living Arrangements of Participants

Living Arrangement	Majority of Life (*n*)	Past Year (*n*)	Past 30 Days (*n*)
Adoptive Parents	4	4	4
Both Birth/Biological Parents	74	57	57
Father & Step Parent	2	3	6
Father Only	8	9	10
Foster Family	0	0	1
Grandparents/Other Relatives	11	12	12
Joint Custody	7	5	7
Mother & Step Parent	14	26	22
Mother Only	46	50	47

Descriptive statistics were gathered for the outcome variables, frequency of substance use and poly-substance use. Both variables were dichotomized into lower and higher levels of frequency and poly-substance use. The majority of adolescents, approximately 80 percent, reported lower frequency (*n* = 130) and poly-substance use (*n* = 133). Meanwhile, about twenty percent of the sample reported higher levels of frequency (*n* = 36) and poly-substance use (*n* = 33) (see Table 7).

Table 7

Descriptive Statistics for Substance Use (n = 166)

Outcome Variables	*n*	Percentage	*M*	*SD*
Frequency of Substance Use			.22	.41
Lower Frequency (≤15)	130	78.3%		
Higher Frequency (≥16)	36	21.7%		
Poly-Substance Use			.20	.40
Lower Poly-Substance (0-1)	133	80%		
Higher Poly-Substance Use (2-3)	33	20%		

Variable Correlations

Pearson correlations were computed to examine the intercorrelations of the variables. Table 8 shows that fifteen out of the twenty-eight pairs were significantly correlated. The strongest positive correlation, which would be considered a large effect size, was between relationship quality with father and relationship quality with mother, r (135) = .77, $p < .01$. This

means that the relationship that adolescents experienced with their fathers were very likely to reflect a similar relationship with their mother. Since the relationship quality variables for mothers and fathers were kept separate from the variable related to adolescent's ability to feel they can turn to each parent to talk about what bothers them, it is not a surprise that this variable still relates and has a medium effect size with the relationship quality variables.

Additionally, frequency of substance use and poly-substance use were positively correlated, r (135) = .51, $p < .001$. showing a medium to high effect according to Cohen (1988). This means that adolescents who had higher frequency in substance use were likely to have higher poly-substance use. Relationship quality with mother had a positive correlation with frequency of substance use, r (135) = .18, $p < .05$, and poly-substance use, r (135) = .21, $p < .05$. These results demonstrate that for adolescents who experience their mother as being dissatisfied with their attitude and behavior and disappointed in them are more associated with higher rates in frequency of substance use and poly-substance use. Both reflect small effect sizes according to Cohen (1988).

Gender was positively correlated with relationship quality with mother, r (135) = .30, $p < .001$, relationship quality with father, r (135) = .20, $p < .05$, and talking with fathers, r (135) = .26, $p < .01$. These all reflect a lower effect according to Cohen (1988). This means that adolescent girls were associated with experiencing more difficulty talking with fathers about what is bothering them and feeling as though both fathers and mothers are dissatisfied with their attitude and behavior and disappointed in them.

Additionally, negative peer association was correlated with frequency of substance use, r (135) = .24, $p < .01$, poly-substance use, r (135) = .24, $p < .01$, and relationship quality with mother, r (135) = .20, $p < .05$. Although these are small effect sizes, adolescents who were

involved with negative peer groups were likely to use more substances more regularly and have a difficult relationship with their mother.

Through the use of Pearson correlations, the findings that were most revealing were that more difficult relationships with mothers were significantly correlated with females, higher frequency and poly-substance use, and negative peer associations.

Table 8

Intercorrelations, Means, and Standard Deviations for Variables (N = 137)

Variable	1	2	3	4	5	6	7	8	*M*	*SD*
1. Gender	--	.10	.08	.30**	.20*	.08	.15	.26**	.26	.44
2. Freq. Use	--	--	.51**	.18*	.10	.24**	-.01	.059	.23	.42
3. Poly-Sub	--	--	--	.21*	.05	.24**	.13	.11	.20	.40
4. RQ_Mother	--	--	--	--	.77**	.20*	.50**	.36**	1.64	1.78
5. RQ_Father	--	--	--	--	--	.16	.35**	.42**	1.52	1.81
6. Neg. Peers	--	--	--	--	--	--	.13	.03	1.69	1.83
7. Talk_Mother	--	--	--	--	--	--	--	.50**	.70	1.00
8. Talk_Father	--	--	--	--	--	--	--	--	.98	1.09

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

Comparison of Males and Females

Independent Samples T-Tests were used to investigate mean differences among male and female adolescents for substance use, negative peer relationships, and relationship quality with parents. Table 9 shows that females (*M* = 2.43, *SD* = 2.07) had significantly higher scores from males (*M* = 1.40, *SD* = 1.58) for relationship quality with mothers, $t(163) = 3.39$, $p = .001$. Inspection of the two group means indicate that the average relationship quality with mothers score for female adolescents is significantly higher than the score for males. This appears to reflect that female adolescents had more difficult experiences in their relationships with their mothers compared to male adolescents. The effect size d is approximately .6, which is a medium or typical effect size.

Additionally, results from the t-tests show that females ($M = 2.14$, $SD = 2.08$) had significantly different scores than males ($M = 1.27$, $SD = 1.64$) for relationship quality with fathers, $t(139) = 2.56$, $p = .01$. Similar to results for relationship quality with mother, female adolescents had scores reflecting a lower relationship quality with fathers compared to their male counterparts. The effect size d is approximately .5, which is a medium or typical effect size. Further, the mean difference between males and females on communication with fathers was significant, $t(148) = 2.44$, $p = .02$. Females ($M = 1.36$, $SD = 1.18$) had significantly higher means compared to males ($M = .87$, $SD = 1.03$), which reflects females having a difficult experience talking to their fathers about what bothers them as compared to males. The effect size d is approximately .45.

Table 9 shows that the means for females on frequency of substance use, poly-substance use, and negative peer relationships were higher than for males, but this difference was not enough to be significant.

Table 9

Comparison of Male and Female Adolescents on Substance Use, Negative Peer Relationships, and Relationship Quality with Parents

Variable	M	SD	n	t	df	p
Frequency Use				1.25	164	.21
Males	.19	.40	124			
Females	.29	.46	42			
Poly-Sub				1.18	164	.24
Males	.18	.38	124			
Females	.26	.45	42			
Neg. Peers				-.61	16	.54
Males	1.70	1.73	124			
Females	1.90	2.19	42			
RQ_Mother				3.39	163	.001***
Males	1.40	1.58	123			
Females	2.43	2.07	42			
Talk_Mother				1.61	161	.11
Males	.66	.92	122			
Females	.95	1.16	41			
RQ_Father				2.56	139	.01**
Males	1.27	1.64	104			
Females	2.14	2.08	37			
Talk_Father				2.44	148	.02*
Males	.87	1.03	111			
Females	1.36	1.18	39			

Logistic Regression to Test Linearity

Binary logistic regression was initially used to test linearity between predictor and outcome variables separately. I assessed whether the predictor variables of gender, relationship quality with mother, relationship quality with father, communication with mother, communication with father, and negative peer association, significantly predicted whether or not adolescents had higher levels of frequency and poly-substance use. When logistic regressions were tested for each predictor variable separately, relationship quality with mother was found to be statistically significant with frequency of substance use, $\chi^2 = 6.95$, $p < .01$, and poly-substance use, $\chi^2 = 7.83$, $p < .01$ (see Table 10). This suggests a positive association, meaning a lower quality relationship between mother and adolescent predicts higher levels of frequency and poly-

substance use. In other words, a higher quality relationship with mother is associated with lower levels of substance use. Additionally, higher levels of negative peer association significantly predicted frequency of substance use, $\chi^2 = 9.99$, $p < .01$, and poly-substance use, $\chi^2 = 9.35$, $p < .01$ (see Table 10). This means that adolescents who are associated with peers who get in trouble with the police and at school, and use alcohol or drugs predicts higher frequency and poly-substance use. The variables related to communication with mothers and fathers were removed from the main statistical analyses, because they were not found to be significant predictors of frequency of substance use and poly-substance use.

Table 10

Linearity of Predictor and Outcome Variable

	Frequency of Use			Poly-Substance Use		
Variable	*B*	*SE*	*p*	*B*	*SE*	*p*
Gender	.51	.41	.21	.50	.42	.24
RQ_Mother	.46	.18	.01**	.51	.19	.01**
Talk_Mother	.04	.06	.56	-.01	.01	.63
RQ_Father	.01	.01	.44	.01	.01	.99
Talk_Father	.04	.06	.56	.01	.01	.87
Neg. Peers	.56	.16	.01**	.55	.18	.01**

Research Questions 1

The first research question I investigated is as follows: Does the association between relationship quality with mother/father and frequency of substance use differ for male and female adolescents? I hypothesized that higher quality relationships would be associated with lower rates of frequency substance use among adolescents. I thought this difference would have higher significance for female adolescents, which was developed based on findings from previous research (e.g. Mashal, & Chassin, 2000; Yeh, Chiang, & Huang, 2006; Springer et al., 2006). Also, I hypothesized that there would be gender-specific differences in quality of the relationship

with mother and father that are more protective and would be associated with lower frequency of substance use.

Race and ethnicity and age were controlled for while testing the research questions using hierarchical logistic regression. These control variables were entered into the first block along with gender and relationship quality with mothers. When these variables were considered together, gender ($p = .40$) was not significant and relationship quality with mother ($B = .56$, $SE = .22$, $p = .001$) was significant in predicting frequency of substance use (see Table 11). This means that a more difficult relationship with mothers predicted higher frequency of substance use. Additionally, one of the control variables, age ($p = .05$), was significant in predicting frequency use, specifically for older teens who identified as being seventeen to eighteen years old ($B = -1.3$, $SE = .46$, $p = .01$). Omnibus Chi-Square shows that the overall model is significant in predicting frequency of substance use ($\chi^2 = 31.27$, $p < .01$). Additionally, Cox and Snell R Square was .17 and Nagelkerke R Square was .27. These are estimates of how much knowing gender, relationship quality with mother, and control variables helps predict frequency of substance use. The classification table showed that, with these predictors, we can account for who will have lower frequency of substance use (98%) better than we can account for who will have higher frequency of substance use (17%).

The interaction term (gender*relationship quality with mother) was entered in the next block to see if it would add to the predictive power. The interaction term was not significant nor was the partial chi-square for the interaction term ($\chi^2 = .82$, $p = .36$), although the overall model including all variables was significant ($\chi^2 = 32.09$, $p = .001$). Cox and Snell R Square was .17 and Nagelkerke R Square was .27, showing that by adding the interaction term, the estimates to predict frequency of substance use remained the same. Additionally, the percentage increased in

how well we can account for adolescents who use higher frequency of substances (25%). There was not enough evidence to support the moderator, gender, as being significant in changing the relationship between relationship quality with mother and frequency of substance use. However, the overall model was shown to be significant, which means that when all the variables are considered, frequency of substance use can be predicted.

When gender and relationship quality with fathers were in the same equation, including control variables, gender ($p = .08$) and relationship quality with fathers ($p = .76$) were not found to be significant in contributing to the model in the prediction of frequency of substance use. However, the age group consisting of seventeen to eighteen years old, $B = -.98$, $SE = .44$, $p = .03$. The overall model, including the control variables, was found to be significant ($\chi^2 = 23.99$, $p = .008$). Cox and Snell R Square was .14 and Nagelkerke R Square was .21. The classification table showed that with these predictors, lower frequency of substance use (100%) can be accounted for better than higher frequency of substance use (2.5%).

The interaction term (gender*relationship quality with father) was entered in the next block to see if it would add to the predictive power. The interaction term was not significant nor was the partial chi-square for the interaction term ($\chi^2 = .07$, $p = .79$). However, the overall model including all variables was significant ($\chi^2 = 24.05$, $p = .01$), although the significance is not as strong in comparison to the first model excluding the interaction term. Cox and Snell R Square was .14 and Nagelkerke R Square was .21, showing that the estimates to predict frequency of substance use remained the same. Additionally, the percentage increased in how well higher frequency of substance use (22%) can be accounted for and there was a decrease in lower frequency of use. The overall model was significant in predicting frequency of substance use when accounting for all variables; however, there was not enough evidence to support gender as

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being a factor that changes the relationship between relationship quality with father and

frequency of substance use.

In summary, I found support for my hypothesis that higher quality relationships (i.e.

higher levels of support and approval) with mother would be associated with lower frequency of

substance use among adolescents. However, this was not relevant for relationship quality with

fathers. There was no evidence to support the hypothesis that there would be a higher

significance for female adolescents. Additionally, there was no evidence to support the last

hypothesis that there would be gender-specific differences in quality of the relationship with

mother and father that are more protective and would be associated with lower frequency of

substance use.

Table 11

Main and Interactive Effects of Gender and Parental Relationship Quality on Frequency and Poly-Substance Use

	Frequency of Use				Poly-Substance Use			
	B	*SE*	*p*	χ^2	*B*	*SE*	*p*	χ^2
Block 1				31.27, p = .001				12.58, *p* = .25
Age			.05				.75	
Race/Ethnicity			.45				.99	
Gender	.42	.50	.40		.24	.48	.62	
RQ_Mother	.56	.22	.01		.24	.25	.02	
Block 2				.82, *p* = .36				2.99, *p* = .08
G x RQ_M	.40	.45	.37		.74	.44	.09	
Model				32.09, *p* = .001				15.57, *p* = .16
Block 1				23.99, *p* = .008				6.59, *p* = .76
Age			.11				.79	
Race/Ethnicity			.53				.99	
Gender	.80	.46	.08		.55	.45	.22	
RQ_Father	.002	.01	.76		-.001	.01	.82	
Block 2				.07, *p* = .79				.28. *p* = .60
G x RQ_F	.004	.02	.80		.01	.27	.60	
Model				24.05, *p* = .01				6.87, *p* = .81

Research Question 2

The second research question I investigated is as follows: Does the association between relationship quality with mother/father and poly-substance use differ for male and female adolescents? Again, I hypothesized that higher quality relationships would be associated with lower rates of poly-substance use among adolescents. I thought this difference would have higher significance for female adolescents. This was developed based on examples from previous research (e.g. Mashal, & Chassin, 2000; Yeh, Chiang, & Huang, 2006; Springer et al., 2006). I hypothesized that there would be differences between male and female adolescents in relationship quality with mother and father. I suspected that there would be gender-specific relationships that would be more protective and would be associated with lower poly-substance use.

Race and ethnicity and age were controlled for while testing this research question. These control variables were entered into the first step along with gender and relationship quality with mother. Logistic regression results showed that gender ($p = .62$) was not significant and relationship quality with mother ($B = .24$, $SE = .25$, $p = .02$) was significant in predicting poly-substance use. Similar to the previous findings on frequency of substance use, more difficult relationships with mothers predicted higher rates of poly-substance use. However, the overall model was not significant ($\chi^2 = 12.58$, $p = .25$). This hierarchical regression was conducted simultaneously with the interaction term (gender*relationship quality with mother) entered in the next block. The interaction term was not significant nor was the partial chi-square for the interaction term ($\chi^2 = 2.99$, $p = .08$). The overall model including all variables was not significant ($\chi^2 = 15.57$, $p = .16$). This model did not support the moderator and gender, in

significantly changing the relationship between relationship quality with mother and poly-

substance use.

Next, gender and relationship quality with father were entered in the same model with the

control variables. The results showed that neither gender ($p = .22$) nor relationship quality with

father ($p = .82$) were significant in predicting poly-substance use when they were both in the

equation (see Table 11). Omnibus Chi-Square shows that gender and relationship quality with

father were not significant in predicting poly-substance use ($\chi^2 = 6.59$, $p = .76$). Additionally, the

second model including the interaction term (gender*relationship quality with father) did not add

to the predictive power. The interaction term was not significant nor was the partial chi-square

for the interaction term ($\chi^2 = .28$, $p = .59$). Additionally, the overall model including all variables

was not significant ($\chi^2 = 6.87$, $p = .81$). Similar to the results including relationship quality with

mother variable, there was no evidence to support the moderator, gender, in changing the

relationship between relationship quality with father and poly-substance use.

I did not find evidence to support my hypotheses that a higher quality relationships with

mothers and fathers would be associated with lower rates of poly-substance use and that there

would be a higher significance for female adolescents. Additionally, there was no evidence to

support the last hypothesis that there would be gender-specific differences in quality of the

relationship with mother and father that are more protective and would be associated with lower

poly-substance use.

Research Question 3

The third research question I investigated included, does a higher quality relationship

with mother/father moderate the association between negative peer groups and adolescents'

frequency of substance use? I hypothesized that a higher quality relationship with parents

(mother or father) would be protective against the effect of negative peer association on the frequency of substance use. This is supported by previous literature that highlights the importance of parent-child relationships that are found to be protective (e.g. Abar, Jackson, & Wood, 2014).

First, race and ethnicity and age were controlled for while testing these research questions using hierarchical logistic regression. This test showed that negative peer groups ($B = .63$, $SE = .25$, $p = .01$) relationship quality with mother ($B = .46$, $SE = .22$, $p = .04$), and the age group of seventeen to eighteen years old ($B = -1.21$, $SE = .48$, $p = .01$) were significant in predicting frequency of substance use when they were all in the equation (see Table 12). Omnibus Chi-Square shows that negative peer groups and relationship quality with mother are significant in predicting frequency of substance use when in the same model ($\chi^2 = 37.76$, $p < .001$). This means that more difficult relationships with mothers and involvement with negative peer groups predicts higher frequency of substance use. Cox and Snell R Square was .20 and Nagelkerke R Square was .31. These are estimates of how much knowing association with negative peer groups, relationship quality with mother, and control variables helps predict frequency of substance use. The classification table showed that with these predictors, we can account of who will have lower frequency of substance use (98%) better than we can account for who will have higher frequency of substance use (25%).

The interaction term (negative peer groups*relationship quality with mother) was entered in the next block to see if it would add to the predictive power. The interaction term was not significant nor was the partial chi-square for the interaction term ($\chi^2 = .21$, $p = .65$), although the overall model including all variables was significant ($\chi^2 = 37.97$, $p < .001$). Cox and Snell R Square was .20 and Nagelkerke R Square was .32, showing that by adding the interaction term,

the estimates to predict frequency of substance use were approximately the same as the previous model. Additionally, the percentages in the classification table remained the same. Overall the model was significant when accounting for all variables, but relationship quality with mother was not found to moderate the relationship between association with negative peer groups and frequency of substance use.

When association with negative peer groups and relationship quality with fathers were in the same equation, including control variables, negative peer groups ($B = .79$, $SE = .24$, $p = .001$) and the age group of seventeen to eighteen years old ($B = -1.04$, $SE = .46$, $p = .02$) were significant and relationship quality with fathers ($p = .51$) was not found to be significant in predicting frequency of substance use, but together they were significant ($\chi^2 = 33.60$, $p < .001$). Cox and Snell R Square was .18 and Nagelkerke R Square was .28. The classification table showed that with these predictors, we can account of who will have lower frequency of substance use (100%) better than we can account for who will have higher frequency of substance use (17%).

The interaction term (negative peer groups*relationship quality with father) was entered in the next block. The interaction term was not significant nor was the partial chi-square for the interaction term ($\chi^2 = .21$, $p = .50$). However, the overall model including all the variables was significant ($\chi^2 = 33.80$, $p < .001$). The R Squares remained the same and the percentages in the classification table decreased slightly to 99% for lower frequency of substance use and 17% for higher frequency of use. Similar to the result with relationship quality with mother, relationship quality with father was not found to be a significant moderator.

I hypothesized that a higher quality relationship with parents (mother or father) would be protective and moderate the association between negative peer groups and frequency of

substance use. There was no evidence to support the moderation of quality relationships for mothers or fathers. Additionally, I predicted that the higher quality relationship with parents would be associated with lower levels of frequency of substance use. There was evidence to support this hypothesis for relationship quality with mothers only.

Table 12

Main and Interactive Effects of Parental Relationship Quality and Negative Peer Association on Frequency and Poly-Substance Use

	Frequency of Use				Poly-Substance Use			
	B	SE	p	χ^2	B	SE	p	χ^2
Block 1				37.76, p = .001				19.13, p = .04
Age			.07				.87	
Race/Ethnicity			.37				.97	
Neg. Peers	.63	.25	.01		.54	.21	.01	
RQ_Mother	.46	.22	.04		.50	.38	.06	
Block 2				.21, p = .65				2.36, p = .12
NP x RQ_M	-.09	.19	.64		-.26	.17	.13	
Model				37.97, p = .001				21.49, p = .05
Block 1				33.6, p = .001				15.43, p = .12
Age			.15				.91	
Race/Ethnicity			.35				.94	
Neg. Peers	.79	.24	.001		.63	.20	.002	
RQ_Father	.01	.01	.51		.001	.01	.93	
Block 2				.21, p = .65				1.56, p = .21
NP x RQ_F	-.08	.18	.67		-.20	.16	.20	
Model				33.80, p = .001				16.98, p = .11

Research Question 4

The fourth research question I investigated included, does a higher quality relationship with mother/father moderate the association between negative peer groups and adolescents' poly-substance use? I predicted that the higher relationship quality with parents (mother or father) would be protective against the effects of negative peer association on poly-substance use. This hypothesis is supported by previous research related to parent-child relationships that have been found to be protective (Abar, Jackson, & Wood, 2014).

Hierarchical logistic regression was used to test this research question. Negative peer association ($B = .54$, $SE = .21$, $p = .01$) was significant and relationship quality with mother ($p = .06$) was not significant in predicting poly-substance use (see Table 12). However, the model was significant ($\chi^2 = 19.13$, $p < .05$). Cox and Snell R Square was .11 and Nagelkerke R Square was .17. The classification table showed that with these predictors, we can account for who will have lower poly-substance use (98%) better than we can account for who will have higher poly-substance use (12%).

Additionally, when the interaction term (negative peer association*relationship quality with mother) was entered it was not significant nor was the partial chi-square ($\chi^2 = 2.36$, $p = .12$). However, the overall model including all variables was significant ($\chi^2 = 21.49$, $p < .05$). Cox and Snell R Square and Nagelkerke R Square were approximately the same as were the percentages from the classification table. These results show that there was not enough support for moderator, relationship quality with mother, in changing the relationship between association with negative peer groups and poly-substance use.

Negative peer association ($B = .63$, $SE = .20$, $p = .002$) was significant and relationship quality with father ($p = .93$) was not statistically significant in predicting poly-substance use when in the same model as the control variables. When they are both in the equation (see Table 12), and the model was not significant in predicting poly-substance of use ($\chi^2 = 15.43$, $p = .12$). The interaction term in the second block (negative peer association*relationship quality with father) was not significant nor was the partial chi-square ($\chi^2 = 1.55$, $p = .21$). Additionally, the overall model including all variables was not found to be significant. Therefore, there was not enough evidence to support relationship quality with father as moderating the relationship between negative peer association and poly-substance use.

I hypothesized that a higher quality relationship with mother or father would be protective and moderate the association between negative peer groups and substance use. I predicted that the higher relationship quality with parents, such as experiencing more support and approval from parent, would be protective against the effects of negative peer association on substance use. There was no evidence to support this hypothesis that relationship quality with either parent moderated this association. Relationship quality with either parent was not supported to have a significant impact on poly-substance use while in the same model as negative peer associations. However, negative peer association was a consistent finding in predicting higher levels of frequency and poly-substance use.

Research Question 5

Lastly, I investigated the fifth research question, does the association between negative peer groups and frequency/poly-substance use vary by gender? I predicted that gender would moderate the association between negative peer groups and frequency/poly-substance use. I predicted male adolescents would have higher associations between negative peer groups and substance use. These hypotheses were supported by previous research by SAMHSA (2014), which has highlighted differences in substance use for male and female adolescents.

Results from hierarchical logistic regression showed that negative peer association ($B = .77$, $SE = .24$, $p = .001$) and the seventeen to eighteen-year-old age group ($B = -1.16$, $SE = .47$, $p = .01$) were statistically significant in predicting frequency of substance use, while gender was not ($p = .10$). The model including both variables and the control variables was significant in predicting frequency of use ($\chi^2 = 35.84$, $p < .001$). Cox and Snell R Square was .19 and Nagelkerke R Square was .30. The classification table showed that with these predictors, lower

frequency of substance use (99%) can be better predicted in comparison to predicting those who

will have higher frequency of substance use (28%) (see Table 13).

The interaction term (negative peer group*gender) was entered into the next block and

was found to significantly predict frequency of substance use ($B = .10$, $SE = .47$, $p = .05$),

however the partial chi-square was not significant ($\chi^2 = .05$, $p = .83$). The overall model

including all variables was significant ($\chi^2 = 35.89$, $p < .001$). Cox and Snell R Square and

Nagelkerke R Square values remained the same. Similarly, the classification table indicates the

same percentages as the previous model. While the interaction term was found to be significant

in contributing to the model when the other variables were present, it was not found to be

significant in changing the relationship between negative peer groups and frequency of substance

use. The overall model was significant, which means that when all the variables were included in

the model, together they significantly predicted frequency of substance use.

In the final model, negative peer association, gender, and control variables were entered

in the same model to test their significance in predicting poly-substance use. Negative peer

association ($B = .63$, $SE = .21$, $p = .002$) was significant and gender ($p = .27$) was not significant

in predicting poly-substance use. Together they were not significant in predicting poly-substance

use ($\chi^2 = 16.61$, $p = .08$). Additionally, the interaction term (negative peer group*gender) was

not significant nor was the model significant.

In conclusion, there was no evidence to support my hypothesis that gender would

moderate the association between negative peer groups and substance use. I predicted male

adolescents would have higher associations between negative peer groups and substance use;

however, this hypothesis was not supported. When the interaction term (gender*negative peer

association) was entered in the second step of the hierarchical model to predict frequency of

substance use, it was significant in contributing to the overall model; however, it did not change

the model's significance from the first block. Since gender was dummy coded (Males = 0,

Females = 1), the positive beta reflects a positive association between females and negative peer

association. However, the beta showed this to be a small effect size. There was not enough

evidence to support this for poly-substance use. Overall, negative peer association was

significant in predicting frequency and poly-substance use.

Table 13

Main and Interactive Effects of Gender and Negative Peer Association on Frequency and Poly-Substance Use

	Frequency of Use				Poly-Substance Use			
	$\underline{B}$	$\underline{SE}$	$\underline{p}$	χ^2	$\underline{B}$	$\underline{SE}$	$\underline{p}$	χ^2
Block 1				35.83, $p = .00$				16.61, $p = .08$
Age			.09				.88	
Race/Ethnicity			.35				.96	
Gender	.80	.48	.10		.53	.48	.27	
Neg. Peers	.77	.24	.001		.63	.21	.002	
Block 2				.05, $p = .83$				.34, $p = .56$
G x NP	.10	.47	.05		-.23	.39	.56	
Model				35.89, $p = .001$				19.96, p = .11

Chapter 5: Discussion

The purpose of this study was to gain a deeper understanding of potential protective factors for at-risk adolescents. Specifically, parent-child relationships were examined as predictors of substance use. These relationships have been highlighted in resilience research as being associated with weakening the risk of negative influences (Abar, Jackson, & Wood, 2014). Relationship quality with parents were examined for their protectiveness against the risks of higher rates of substance use even under circumstances when adolescents were associated with peers who got in trouble with the police and at school, and used drugs and alcohol regularly. Also, gender-specific relationships were explored.

It is important to understand protective relationships for adolescents since adolescence is a time when risks are taken and some begin to experiment with substances (Burrow-Sanchez, 2006). Additionally, for those who have already been classified as "at-risk" there is greater association with higher levels of substance use (Childs, Dembo, Belenko, Wareham, & Schmeidler, 2011). Therefore, it is important to research how parent-child relationships can be protective against risk-taking behaviors, such as substance use. This can contribute to improving the overall well-being of adolescents, especially since early initiation of substance use is linked to a number of negative outcomes (NIH, 2014).

In this study, I hypothesized that higher quality relationships would be associated with lower rates of frequency and poly-substance use among adolescents. Higher quality relationships with mothers was found to be associated with lower frequency and poly-substance use among adolescents, however, this was not the case for relationship quality with fathers. I thought this difference would have higher significance for female adolescents. Since gender was not a significant predictor, there was no evidence to support this association having a higher

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significance for female adolescents. Also, I hypothesized that there would be gender-specific differences in quality of the relationship with mother and father that are more protective and would be associated with lower frequency and poly-substance use. However, there was no evidence to support that there were gender-specific differences in the quality of relationship with mother and father that were more protective and would be associated with lower frequency of substance use.

Overall, there have been some inconsistent findings in the literature. Danielsson and colleagues (2011) concluded that secure attachment with parents did not have a protective effect for male or female adolescents. This finding is consistent with the results in the present study, which reflects no gender-specific relationships that were protective. I expected that these relationships would be more protective for female adolescents based on previous research that identified higher quality parent-child relationship as being protective, specifically for adolescent girls (Marshal & Chassin, 2000). Additionally, Danielsson and colleagues (2011) found that when risk factors are present, family may have a protective effect for male adolescents. Interestingly, some researchers found that substance use, such as alcohol use, is more closely related to family relationships specifically for females (Yeh, Chiang, & Huang, 2006). Springer and colleagues (2006) have also found support that females have higher associations between lower parental support and heavy drinking compared to their male counterparts. Due to this strong connection, I had hypothesized that higher relationship quality would be more protective for female adolescence in reducing substance use, especially if lower parental support has been connected to higher levels of use. It is possible that this might be true for a sample that is not already considered at-risk. Further, it is likely that there are other factors in the relationship that

need to be explored as being protective, which may differ for male and female adolescents at-risk.

Additionally, it was hypothesized that a higher quality relationship with parents (mother or father) would be protective and moderate the association between negative peer groups and frequency and poly-substance use. There was no evidence to support that quality relationships with either mothers or fathers moderated the relationship between negative peer association and substance use. I predicted that the higher quality relationship with parents would be a protective factor of the effect of negative peer association on the frequency of substance use. I found that negative peer association and relationship quality with mother were direct predictors of frequency of substance use. A higher quality relationship with mothers was associated with lower levels of frequency of substance use. This did not apply for poly-substance use. Also, relationship quality with fathers did not have a significant impact.

These hypotheses were supported by research from Abar, Jackson, and Wood (2014) who found that higher relationship quality has been associated with weakening the risk of negative influences as well as fostering positive influences. This study had included relationship quality to reflect support and approval of each parent. However, other forms of parenting have been seen to be protective and reduce risk for adolescents. For instance, parental monitoring has been highlighted in research as disrupting the link between negative peer influences and substance use among adolescents (Laird, Criss, Pettit, Dodge, & Bates, 2008). Stable environments, effective communication between parent and child, consistent supervision and discipline, and receiving strong messages against substance use are other factors associated with decreasing the risk of substance abuse (Walker, Mason, & Cheung, 2006).

There are a number of other possibilities that might moderate the association between negative peer association and substance use, which are not directly related to parent-child relationships. For example, social support (e.g. positive peers, supportive teachers, and other adults) and community factors (e.g. good schools), community services, and cultural factors (e.g. spirituality and religion) have been found to be protective factors for youth (Herrman et al., 2011). Due to the complexity of identifying protective factors that mitigate the risk between negative peer association and substance use, it is worth further exploration to better support adolescents.

Lastly, I hypothesized that gender would moderate the association between negative peer groups and frequency/poly-substance use. I predicted male adolescents would have higher associations between negative peer groups and substance use. The results in the present study did not show any significant direct effects between gender and substance use. This was an interesting finding since I developed this hypothesis based on previous research highlighting males as being associated with higher rates of substance use and being more likely than females to use more types of illicit drugs (SAMHSA, 2014). This result is consistent with previous research by Danielsson, Romelsjo, and Tengstrom (2011) who found no gender difference in the association between peers who use substances and teens having higher rates of use.

In the present study, the interaction term of gender*negative peer association was significant when the other variables (gender, negative peer association, age, and race/ethnicity) were also present. The interaction term did not improve the first model, but it contributed to the overall significance of the second model. The results showed a positive association for female adolescents and negative peer association. It is possible that this significance within the model is due to the interaction term being correlated with negative peer association. Since, negative peer

association is a strong predictor in the model, it is likely that it is a strong contributor to the significant result. Also, it is possible that any significance in gender, specifically for females, is overshadowed by the majority of the sample being male adolescents. Ma and Huebner (2008) found that female adolescents were associated with stronger attachment to peers. It is possible that this stronger attachment is linked to female adolescents having a difficult time resisting the pressures from their peer groups. Negative peer association continued to show significance in predicting frequency and poly-substance use for both males and females. There are likely other protective factors that moderate the association between negative peer association and substance use. For this reason, it will be important to further explore other potential factors that can mitigate this relationship.

What remains unresolved from this study? Resilience involves complex processes of interrelated risk and protective factors at individual, family, and community levels, which can make it difficult to find a clear set of factors or relationship qualities that can serve as protective factors for adolescents. Overall, higher relationship quality with mothers was associated with lower levels of frequency and poly-substance use while there was no significant association for relationship quality with fathers. It would be valuable to explore the relationship differences between mothers and fathers more in depth to have a better understanding of which characteristics in these relationships may be helpful in reducing risk. Additionally, it would be beneficial to explore the protective factors that mitigate the negative influences from negative peer association. It would be worthwhile to investigate the protective factors that might differ for male and female adolescents. Lastly, it will be important to further explore complex interactions between risk and protective factors that are gender-specific for adolescents.

Implications

      This research has implications for treatment and prevention programs. While this particular sample did not show parental relationships as protecting against the effects of negative peer groups on substance use, there were some interesting findings that a higher relationship quality with mothers was associated with lower substance use for all adolescents. Treatment and prevention program providers can use this information to support their work with at-risk adolescents. Walsh's family resilience framework places emphasis on using family strengths to counter negative outcomes (Walsh, 2003b). Since higher relationship quality with mothers was one of the most significant finding, it would be worth including mothers in the treatment process to use that relationship to promote resilience for teens who are at-risk for higher rates of frequency and poly-substance use.

      Abar, Jackson, and Wood (2014) suggest that parent-based prevention and intervention programs highlight the importance of consistent parental efforts and the impact of various types of parenting practices. Therapists can help parents help their children by heightening parents' awareness of how their teen perceives their relationship. Additionally, therapists can assist parents in developing skills to strengthen their relationship with their teen and to provide more support. Prevention and intervention providers can use a psycho-educational approach to inform parents of parenting practices that can support their teen through the trials of adolescence and peer pressures. For example, the Guiding Good Choices is a substance abuse prevention program that gives parents the knowledge and skills needed to help guide their children (Stanis, & Anderson, 2014). While this program includes parents, there is not a focus on strengthening the parent-child relationship to help support their children navigate through the trials of adolescence. In general, many of the prevention programs are aimed towards helping youth develop

competence and self-esteem in social, emotional, and cognitive domains (Seidman, & Pederson, 2003). Although these programs are found to reduce substance use, anxiety, and behavioral issues (Masten, & Obradovic, 2006), parental involvement and mentor support have also been found to be critical for effective intervention (Stanis, & Anderson, 2014). The Strengthening Families Program is one example that focuses on increasing family support, parental monitoring, and stable friendships to reduce risk of substance use among adolescents (Stanis, & Anderson, 2014).

Additionally, some substance abuse treatment centers do not include families in recovery. Family participation in treatment is considered low (Fisher, & Harrison, 2009), however programs should work harder to incorporate them in the treatment process since they play an important role in the support system. There has been more attention placed on the importance of evidence-based family therapies, specifically for families with justice-involved youth (Liddle, 2014). Multidimensional family therapy is an evidence-based treatment approach that was developed to treat adolescent drug abuse and antisocial behaviors (Liddle, 2015). This approach includes the adolescent, family, and extra-familial interactions. Parents are active in this process (Liddle, 2014), whereas other treatment approaches for adolescents using substances have had an individual or peer focus (Liddle et al., 2008). Other common approaches such as cognitive behavioral therapy can incorporate family therapy approaches to support adolescents in their treatment (Liddle et al., 2008).

Lastly, negative peer association was found to be associated with higher frequency and poly-substance use. This information supports program components that focus on adolescents' abilities to resist peer pressure or norms related to substance use (Danielsson, Romelsjo, & Tengstrom, 2011). Additionally, the results highlighted that female adolescents had a positive

association with negative peer groups. Kumpfer, Smith, and Summerhays (2008) found that prevention programs that included learning social resistance skills, reducing negative social influences, and altering perceived social norms about substance use, had higher success for female adolescents. By including skill-building in preventive interventions, this might be valuable in giving adolescents the tools they need to successfully protect themselves from negative influences. Prevention programs can include gender-specific needs to help teens combat the outcomes associated with involvement with negative peer groups.

Additionally, a focus on strengthening the parent-teen relationship and skill-building to help reduce the involvement with negative peer groups would be beneficial since negative peer groups have a high association with substance use. Marshal & Chassin (2000) suggested that prevention-intervention programs target parental support and discipline to reduce negative outcomes associated with negative peer involvement. According to Walsh (2006), all therapeutic efforts can be preventive when helping families develop strengths to mitigate future challenges. Therapists can be resilience-oriented by using a strength-based approach, foster family empowerment, and help families be proactive in facing future challenges (Walsh, 2006).

Limitations

The large majority of this sample included White males. Participants who identified as male accounted for 124, while their female counterparts accounted for 42 of the 166 total participants. Preliminary analysis results showed mean differences for males and females, however the differences were not enough to be significant. With a balanced sample, it is possible that these differences could become significant. Furthermore, the sample was not ethnically or racially diverse. Approximately, 78 percent of participants reported being White and the remaining 22 percent identified as being Black, Hispanic/Latino, Asian/Pacific Islander,

American Indian/Native Alaskan or Other. Due to the high-risk sample with limited diversity, this limited generalizability of results to the adolescent population.

In further comparison of the sample demographics to those of Roanoke, Virginia and the statewide juvenile involvement in the court system, there are some differences. For example, according to the U.S. Census Bureau, Roanoke County consists of approximately 88 percent White, six percent Black, and three percent Hispanic individuals (2015). According to the Virginia Department of Juvenile Justice [DJJ], case demographics statewide included approximately 48 percent White, 43 percent Black, nine percent Hispanic (2015). Approximately 33 percent were female and 67 percent were male (DJJ, 2015). Essentially, the study's sample from Roanoke County and the statewide statistics for juvenile involvement showed an underrepresentation of White adolescents and an overrepresentation of Black adolescents compared to Roanoke County general population. There continues to be a disproportionate minority involvement in the juvenile justice system. Although there has been an overall decline in arrests nationally, black youth continue to be twice as likely to be arrested than white youth (Rovner, 2014).

Additionally, I lost variation by dichotomizing frequency and poly-substance use. Given the background of the participants, it is surprising that there were lower reports of frequency and poly-substance use. Williams and Nowatzki (2009) found that adolescents' self-reports of substance use have only fair validity. They used the Adolescent Drug and Alcohol Diagnosis (ADAD) and compared results to biochemical test results. Results showed that out of 367 adolescents 28 percent of the self-reports were not verified by urinalysis (Williams, & Nowatzki, 2009). Twenty-six percent of adolescents who did not report use had tests that came back positive and 34 percent of adolescents reported use, but had negative results in urinalysis

(Williams, & Nowatzki, 2009). Overall, these results reveal that adolescents do not show strong validity in self-reporting substance use, which can explain possible underreporting in the data. This is a major contributor, which negatively affected goodness of fit.

Also, since the adolescents were being supervised by the court at the time of assessment, this may have affected the validity of their responses, as well. If they were being monitored for their substance then this is a likely contributor to the lower rates of substance use reported. Either adolescents were no longer using due to being monitored or this could have influenced their answers knowing that the assessment report would be sent to the court. Additionally, Dr. Hartman, met with their parent(s) to gather collateral information regarding their reports of substance use. This may have contributed to the validity in the reports for the same reasons.

Additionally, there were some missing data or responses of "Does not apply" to questions regarding adolescents' relationships with their mother and father. Living arrangements with different types of guardians varied and some adolescents had biological parents who were deceased or they were unsure if parent was still alive. Questions were asked in a way that reflected them answering about their relationship with their mother/father or mother/father figure. Answers were based on the interpretation for the participants on who that mother/father or mother/father figure was to them. Although there were very few missing or "Does not apply" answers, these data were marked as missing.

Another concern is that there are major individual differences in people's responses to similar experiences (Rutter, 2006) and there are many differences within families who are at risk for substance abuse (Werner, & Johnson, 1999). In research, this is important to consider, because each adolescent who is considered at-risk will have different risk and protective factors interrelated that will influence his or her response.

Future Research

Future research on this topic will be beneficial if models are tested with larger, more diverse samples. Investigating which parent is fostering the parent-youth relationship (Mogro-Wilson, 2008) continues to remain an important area for further research. Additionally, research can isolate relative contributions of gender specificity and parent involvement (Schinke, Fang, Cole, & Cohen-Cutler, 2011), which is worth taking a closer look at as I attempted to do in this research project. This would help gain insight to the protectiveness of gender-specific relationships between parent and child.

There is a need to continue to research multiple aspects of relationship quality and parenting styles (Abar, Jackson, Wood, 2014). There is also a great need to understand interactions (Danielsson, Romelsjo, & Tengstrom, 2011) of protective and risk factors as it relates to substance use of adolescents. This can inform preventive efforts and assist clinicians working with teens and their family members.

Additionally, it would be valuable to investigate between group (i.e. racial and ethnic subgroups) differences or study these groups separately to better understand protective factors related to culture (Mogro-Wilson, 2008). There may be some cultural protective factors for adolescents that might be worth investigating further. There is more need to explore mediating and moderating processes of resilience. Cultural and gender differences deserve more focus in research to understand if resilience processes are relevant for both sexes and for different ethnic groups (Taylor et al., 2003). This could greatly contribute to prevention and treatment programs that are culturally sensitive for adolescents and their families.

In general, resilience involves complex processes of interrelated risk and protective factors at individual, family, and community levels. These processes have potential to fluctuate

at different ages and developmental stages (Vanderbilt-Adriance & Shaw, 2008). One of the control variables in the present study, age, was significant in predicting frequency use, specifically for older teens who identified as being seventeen to eighteen years old. This is consistent with previous research which associates higher rates of alcohol and marijuana with 12th graders (NIH, 2016). Investigating differences in protective relationships across different ages during adolescence would be worth exploring. This might provide insight into how the impact of relationships with parents might change based on developmental ages.

Further, it would be beneficial to include parents' substance use as a predictor of adolescents' substance use. Parents are considered to be an environmental factor that can increase risk for children to have substance use problems (NIH, 2014). Family history of substance abuse and dependency has been identified as putting adolescents at greater risk for developing abuse and dependence across substances (Haggerty et al., 2007).

It has been highlighted in the resilience literature that youth who are strong, have positive relationships, participate in multiple activities, have higher intelligence, use their language and reasoning skills, are affectionate, maintain religion or spirituality, have hope, self-efficacy, and self-worth, and use their resources are more likely to overcome adversity (Johnson & Wiechelt, 2004). Therefore, researchers can focus on investigating the influence of these aspects and how they can benefit prevention and intervention programs. Uncovering these components will help set a stronger foundation to support future research on the topic of resilience.

Conclusion

Adolescence can be a particularly difficult time, especially when teens face increased peer pressure to use substances (Bahr, Hoffmann, Yang, 2005; Reinherz, Giaconia, Carmola Hauf, Wasserman, & Paradis, 2000). In previous research, parental support has been found to be

associated with lower levels of substance use. Protective parental relationships have been highlighted in the resilience literature (e.g. Burrow-Sanchez, 2006; Abar, Jackson, & Wood, 2014). The goal of this study was to identify the gender-specific relationships with parents that were associated with lower frequency and poly-substance use among at-risk adolescents. Higher relationship quality with mothers was consistently connected to lower rates of substance use. However, relationship quality with fathers was not found to be significant. Gender did not moderate the relationship between negative peer association and substance use. Females were found to be associated with negative peer groups; however, this was a small effect size. Gender-specific differences are worth further exploration.

These results have implications for treatment and prevention programs, which includes the strengthening parent-child relationships to reduce risk of substance use when engaged with negative peer groups. Future research can include a more diverse population and not isolate the study to only consider at-risk adolescents. There is a great need to understand interactions (Danielsson, Romelsjo, & Tengstrom, 2011) of protective and risk factors as it relates to substance use. Researchers can contribute to the literature by investigating specific aspects of parenting that are associated with lower association with negative peer groups and substance use.

There has been a significant amount of focus on the protectiveness of parent-child relationships. Parents can play an important role in promoting resilience and providing support for their adolescents. Walsh (2006) states, "Family members may not be able to control the outcome of events, but they can make choices and find meaningful ways to participate actively in the process of unfolding events, influencing the quality of life and relationships" (pp. 71). Further investigation is needed to better understand the meaningful ways that parents can participate in improving the quality of life for their teens.

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Conceptual Map for Research Questions 1 & 2
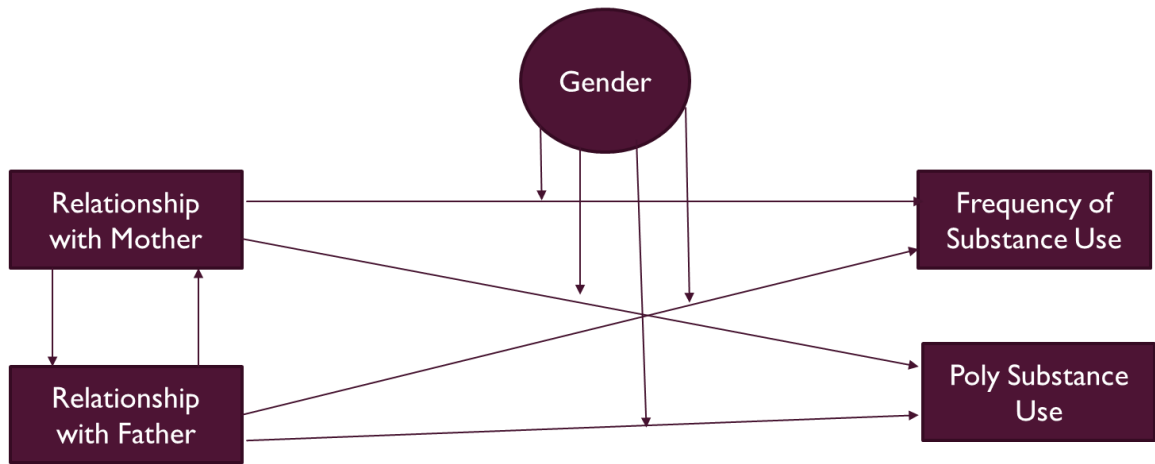
Conceptual Map for Research Questions 3 & 4
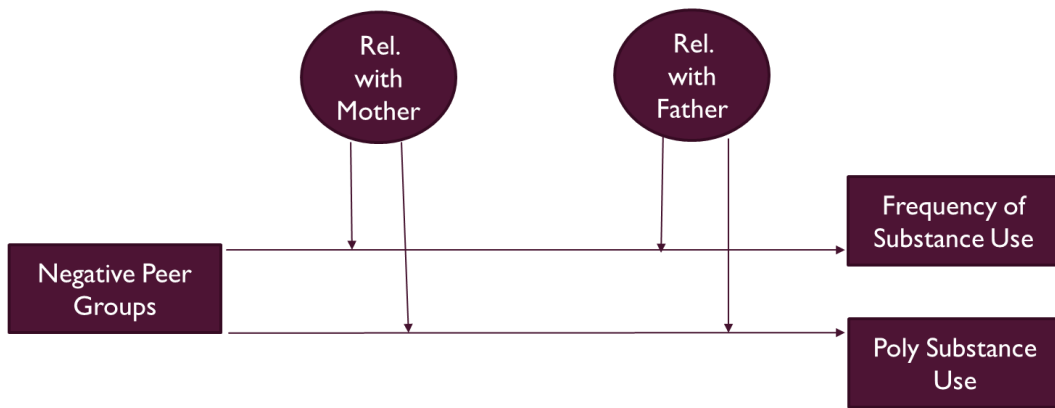
APPENDIX C

Conceptual Map for Research Question 5
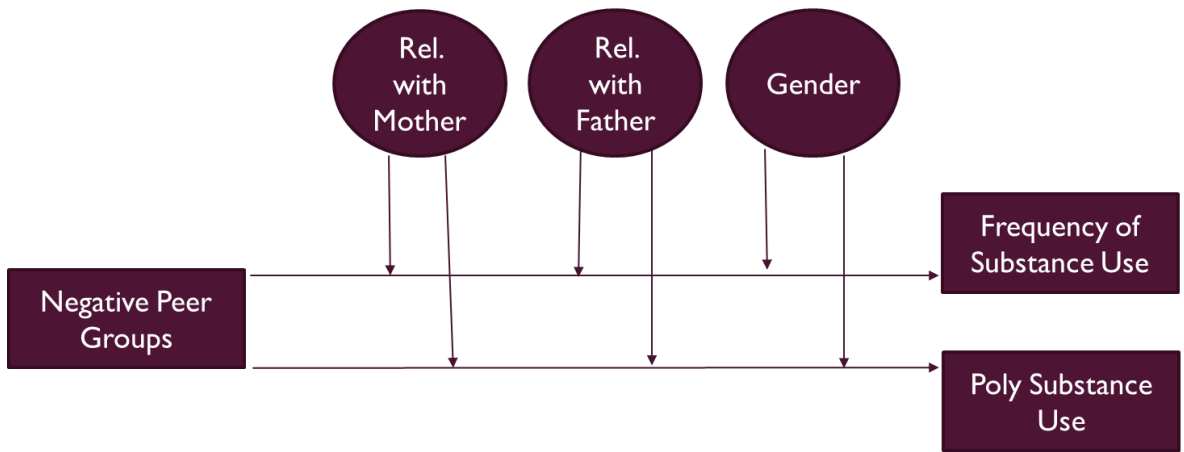
Adolescent Drug & Alcohol Diagnostic (ADAD)
Online Version Created by Dr. Mark Kilgus

Demographics

1. ID (enter your assigned participant code):

2. Zip Code:

3. Age in years:
   - ❍ 11
   - ❍ 12
   - ❍ 13
   - ❍ 14
   - ❍ 15
   - ❍ 16
   - ❍ 17
   - ❍ 18
   - ❍ 19
   - ❍ 20
   - ❍ 21

4. Gender:
   - ❍ Male
   - ❍ Female

5. Race:
   - ❍ White
   - ❍ Black
   - ❍ Hispanic/Latino
   - ❍ Asian/Pacific Islander
   - ❍ American Indian/Alaskan Native
   - ❍ Other

6. Marital Status:
   - ❍ Single
   - ❍ Married/Partner
   - ❍ Separated
   - ❍ Divorced
   - ❍ Widowed

7. Religious Preference:
    - ⭘ Christian
    - ⭘ Jew
    - ⭘ Islam
    - ⭘ Hindu
    - ⭘ Other
    - ⭘ Atheist
    - ⭘ None

Physical Health

1. How many times in the past year have you had physical problems that needed a doctor's attention or a visit to a clinic or hospital?
    - ⭘ None
    - ⭘ 1
    - ⭘ 2
    - ⭘ 3
    - ⭘ 4
    - ⭘ 5
    - ⭘ 6
    - ⭘ 7
    - ⭘ 8
    - ⭘ 9
    - ⭘ 10 or more

2. Are you sick often?
    - ⭘ None/ Not at all
    - ⭘ A little
    - ⭘ A fair amount
    - ⭘ A lot

3. How much do you worry about your physical health?
    - ⭘ None/Not at all
    - ⭘ A little
    - ⭘ A fair amount
    - ⭘ A lot

4. How would you rate your overall physical health?
    - ⭘ Poor
    - ⭘ Fair
    - ⭘ Good
    - ⭘ Excellent

5. How many times in your life have you stayed overnight in a hospital for a physical problem?
    - ○ None
    - ○ 1
    - ○ 2
    - ○ 3
    - ○ 4
    - ○ 5
    - ○ 6
    - ○ 7
    - ○ 8
    - ○ 9
    - ○ 10 or more

6. Have any of your physical problems ever been life threatening?
    - ○ No
    - ○ Yes

7. Have you ever been told by a doctor or a healthcare provider that your physical problems will continue to bother you or interfere with your life?
    - ○ No
    - ○ Yes

8. Are any medications prescribed to you at this time for a physical problem?
    - ○ No
    - ○ Yes

9. Do you take this medication as prescribed for your physical problems?
    - ○ Never
    - ○ Sometimes
    - ○ Often
    - ○ Always
    - ○ Does not apply

10. Do any of the following health problems apply to you now or in the past?

	No	Yes, earlier (in your lifetime)	Yes, now (within 30 days)	Yes, now and earlier
a. Dental problems	○	○	○	○
b. Vision problems/Poor eyesight	○	○	○	○
c. Hearing problems	○	○	○	○
d. Allergies	○	○	○	○
e. Trouble breathing	○	○	○	○
f. Frequent colds	○	○	○	○
g. Diarrhea	○	○	○	○
h. Overweight	○	○	○	○
i. Underweight	○	○	○	○
j. Eating/appetite problems	○	○	○	○
k. Headaches (frequent headache or migraine)	○	○	○	○
l. Nausea / vomiting	○	○	○	○
m. Pounding or racing heart	○	○	○	○
n. Other Heart problems	○	○	○	○
o. Sleeping problems	○	○	○	○
p. Fainting spells	○	○	○	○
q. Seizures	○	○	○	○
r. STDs (Sexually Transmitted Diseases)	○	○	○	○
s. Skin problems	○	○	○	○

11.   Have you been tested for AIDS or HIV?
- ○ No
- ○ Yes, once
- ○ Yes, more than once

12. Have you been tested for STDs (sexually transmitted diseases)?
- ○ No
- ○ Yes, once
- ○ Yes, more than once

13. Are you pregnant?
- ○ No
- ○ Yes
- ○ Does not apply

14. How many days in the past 30 days have you experienced physical problems?
- ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22 ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
- ○ 30

15. How troubled or bothered have you been by these physical problems in the past 30 days? ○ None/Not at all
- ○ A little
- ○ A fair amount
- ○ A lot

16. How important to you now is getting help for physical problems?
- ○ None/Not at all
- ○ A little
- ○ A fair amount
- ○ A lot

School

1. What grade were you in last?
   - ❍ 4th
   - ❍ 5th
   - ❍ 6th
   - ❍ 7th
   - ❍ 8th
   - ❍ 9th
   - ❍ 10th
   - ❍ 11th
   - ❍ 12th

2. Have you ever repeated a grade?
   - ❍ No
   - ❍ Yes

3. How many times have you been suspended from school this year?
   - ❍ None
   - ❍ 1
   - ❍ 2
   - ❍ 3
   - ❍ 4
   - ❍ 5
   - ❍ 6
   - ❍ 7
   - ❍ 8
   - ❍ 9
   - ❍ 10 or more

4. Have you ever been expelled from school?
   - ❍ No
   - ❍ Yes, once
   - ❍ Yes, more than once

5. Are you still enrolled in school?
   - ❍ No
   - ❍ Yes
   - ❍ Not sure

6. If not enrolled in school, what is the reason?
   - ❍ Finished school/graduated

○ Stopped going to school or dropped out
○ Not allowed in school
○ Home-bound/Home schooling
○ Does not apply

7. How many days in the last 30 days have you been absent from school?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
   ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
○ 30

8. How much did you participate in activities outside of classes?
○ None/Not at all
○ A little
○ A fair amount
○ A lot

9. How were your grades during the last school year you attended?
○ Below average
○ Average
○ Above average

10. How worried are you about doing well in school?
○ None/Not at all
○ A little
○ A fair amount
○ A lot

11. Have you ever experienced any of the following school problems?

	Y/N			
	No	Yes, earlier (in your lifetime)	Yes, now (within 30 days)	Yes, now and earlier
a. Failing in school	❍	❍	❍	❍
b. Cutting too many classes	❍	❍	❍	❍
c. Bored by school	❍	❍	❍	❍
d. Classes too difficult	❍	❍	❍	❍
e. Not motivated to do well	❍	❍	❍	❍
f. School not enjoyable	❍	❍	❍	❍
g. Problems with teachers	❍	❍	❍	❍
h. Sent to principal's office	❍	❍	❍	❍
i. Trouble reading	❍	❍	❍	❍
j. Use sickness to get out of school	❍	❍	❍	❍
k. Feel too restricted in school	❍	❍	❍	❍
l. Disrupt the class	❍	❍	❍	❍
m. Do not complete homework	❍	❍	❍	❍
n. Picked on or bullied at school	❍	❍	❍	❍
o. Attend special classes for learning problems	❍	❍	❍	❍

11.	How many years have you ever attended an alternative school for kids with problems?
- ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10
- ○ 11
- ○ 12

13.	Have you ever been told by a school counselor or doctor that you have an attention or learning problem?
- ○ No
- ○ Yes

14.	How much do you think attention or learning problems prevent you from doing well in school?
- ○ None/Not at all
- ○ A little
- ○ A fair amount
- ○ A lot

15.	Do you receive tutoring or help with schoolwork?
- ○ No
- ○ Yes

16.	Do you want help with schoolwork?
- ○ No
- ○ Yes

17.	Is there a teacher or some other adult at your school who you feel listens to you when you have something to say?
- ○ No
- ○ Yes

18.	How far do you plan to go in school?

- ○ 4th Grade
- ○ 5th Grade
- ○ 6th Grade
- ○ 7th Grade
- ○ 8th Grade
- ○ 9th Grade
- ○ 10th Grade
- ○ 11th Grade
- ○ 12th Grade
- ○ College

19. How many days in the past 30 days have you experienced school problems?
- ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22 ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
- ○ 30

20. How much have school problems bothered you?
- ○ None/Not at all
- ○ A little
- ○ A fair amount
- ○ A lot

21. How important to you now is getting help for school problems?
- ○ None/Not at all
- ○ A little
- ○ A fair amount
- ○ A lot

Employment

1. How many months in the past 6 months have you worked (paid employment)?
- ○ None

○ 1
○ 2
○ 3
○ 4
○ 5
○ 6

2. If you have a job, how many days were you working in the past month?
   ○ None
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
      ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
   ○ 30

3. If you have a job, how many hours a week do you work?
   ○ 0-5 hours
   ○ 6-10
   ○ 11-15
   ○ 16-20
   ○ 21-25
   ○ 26-30
   ○ 31-35
   ○ 36-40
   ○ More than 40

4. Do you want a job?
   ○ No
   ○ Yes

5. If you don't have a job, how many days in the past 30 days have you looked for one?
   ○ None
   ○ 1
   ○ 2

○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
    ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
○ 30

6. How bothered have you been in the past 30 days by work problems?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

7. Do the people you live with see any problems with your work?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

8. Do you know what you want to do for a career?
   ○ No
   ○ Yes

Social

1. How many really close friends do you have?
   ○ 0
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 or more

2. When you have a problem, do you have a friend you can talk to about it?
   - ❍ No
   - ❍ Yes

3.   Of your closest friends, how many:

	None/Not at all	A little	A fair amount	A lot
a. Have been in trouble with the police	❍	❍	❍	❍
b. Use drugs or alcohol regularly	❍	❍	❍	❍
c. Have quit school before graduating	❍	❍	❍	❍
d. Get in trouble at school	❍	❍	❍	❍

3a. Of your closest friends, how many:

	None/Not at all	A little	A fair amount	A lot
e. Do well in school	❍	❍	❍	❍
f. Do your parents know	❍	❍	❍	❍

4.   In the past month, how often did you:

	None/Not at all	A little	A fair amount	A lot
a. Listen to music	❍	❍	❍	❍
b. Read for fun	❍	❍	❍	❍
c. Watch TV	❍	❍	❍	❍
d. Do homework	❍	❍	❍	❍
e. Attend after school or community programs	❍	❍	❍	❍
f. Participate in sports	❍	❍	❍	❍

4a. In the past month, how often did you:

	None/Not at all	A little	A fair amount	A lot
g. Hang out	○	○	○	○
h. Party	○	○	○	○
i. Go out to clubs, bars, etc.	○	○	○	○
j. Engage in gang activity	○	○	○	○

5. How satisfied are you with your social life?
   ○ None/ Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

6. How much of a problem for you is having too much free time?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

7. Is your having too much free time a problem for those with whom you currently live?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

8. Outside of your home or school, is there an adult who you feel really cares about you?
   ○ No
   ○ Yes

9. What is your sexual orientation?
   ○ Straight or Heterosexual
   ○ Questioning or uncertain
   ○ Bisexual
   ○ Homosexual (gay or lesbian)

10. How many romantic relationships did you have during the last year?
   ○ None

○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 or more

11. Do you have a boyfriend/girlfriend or spouse?
○ No
○ Yes

12. Do the people you currently live with have a problem with this romantic relationship?
○ None/Not at all
○ A little
○ A fair amount
○ A lot

13. How satisfied are (or were) you with your most recent romantic relationship?
○ None/ Not at all
○ A little
○ A fair amount
○ A lot
○ Does not apply

14.   Does your most recent boyfriend or girlfriend:

	None/Not at all	A little	A fair amount	A lot
a. Drink alcohol	○	○	○	○
b. Use drugs	○	○	○	○

15.   If you don't have a girlfriend or boyfriend now, how much does it bother you?
○ None/Not at all
○ A little
○ A fair amount

○ A lot
○ Does not apply

16. How many days in the past 30 days, have you been sexually active?
    ○ None
    ○ 1
    ○ 2
    ○ 3
    ○ 4
    ○ 5
    ○ 6
    ○ 7
    ○ 8
    ○ 9
    ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
      ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
    ○ 30

17. How many sexual partners have you ever had in your lifetime?
    ○ None
    ○ 1
    ○ 2
    ○ 3
    ○ 4
    ○ 5
    ○ 6
    ○ 7
    ○ 8
    ○ 9
    ○ 10 or more

18. How often do you use birth control when you are sexually active?
    ○ Never
    ○ Sometimes
    ○ Often
    ○ Always
    ○ Does not apply

19. How often do you use condoms?
    ○ Never
    ○ Sometimes
    ○ Often

○ Always
○ Does not apply

20. Have you ever had sex in exchange for something (for example, a place to live, alcohol, drugs, money)?
○ No
○ Yes, once
○ Yes, more than once

21. How many times have you ever been pregnant?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5 or more
○ Does not apply

22. How many times have you ever made a girl pregnant?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5 or more
○ Does not apply

23. How many children do you have?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5 or more

24. If any, how many of your children are you raising?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5 or more

○ Does not apply

25.   How many days in the past 30 days have you had a serious problem with:

	None	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
a. Your boyfriend or girlfriend	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
b. Other close friends	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
c. Other young people at school or in the neighborhood	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
d. Not having friends	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

26.   How troubled or bothered have you been in the past 30 days by social problems (either problems with friends or problems due to lack of friends)?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

27. How important to you now is getting help for social problems?
   ○ None/ Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

Family

1. Is your birth (biological) mother living?
   ○ No
   ○ Yes
   ○ Not sure

2. Is your birth (biological) father living?
   ○ No
   ○ Yes
   ○ Not Sure

3. Are your birth (biological) parents currently living together?
   - ○ No, never
   - ○ No, separated/divorced
   - ○ Yes

4. What does your birth mother do?
   - ○ Work
   - ○ Unemployed
   - ○ In school
   - ○ In jail or prison
   - ○ Disabled
   - ○ Retired

5. What does your birth father do?
   - ○ Work
   - ○ Unemployed
   - ○ In school
   - ○ In jail or prison
   - ○ Disabled
   - ○ Retired

6. In the past 30 days, who have you lived with?
   - ○ Both birth/biological parents
   - ○ Mother & step parent
   - ○ Mother only
   - ○ Father & step parent
   - ○ Father only
   - ○ Joint custody
   - ○ Grandparents/Other relatives
   - ○ Foster family
   - ○ Group home or other residential facility
   - ○ Friends
   - ○ Boyfriend or girlfriend
   - ○ Spouse or partner
   - ○ Alone
   - ○ Adoptive parent(s)

7. In the past year, with whom have you lived with most?
   - ○ Both birth/biological parents
   - ○ Mother & step parent
   - ○ Mother only
   - ○ Father & step parent
   - ○ Father only

- ❍ Joint custody
- ❍ Grandparents/Other relatives
- ❍ Foster family
- ❍ Group home or other residential facility
- ❍ Friends
- ❍ Boyfriend or girlfriend
- ❍ Spouse or partner
- ❍ Alone
- ❍ Adoptive parent(s)

8. With whom have you lived with for most of your life?
- ❍ Both birth/biological parents
- ❍ Mother & step parent
- ❍ Mother only
- ❍ Father & step parent
- ❍ Father only
- ❍ Joint custody
- ❍ Grandparents/Other relatives
- ❍ Foster family
- ❍ Group home or other residential facility
- ❍ Friends
- ❍ Boyfriend or girlfriend
- ❍ Spouse or partner
- ❍ Alone
- ❍ Adoptive parent(s)

9. How many brothers and sisters do you have?
- ❍ 0
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5 or more

10. Does your mother have a(n): For this question the "Other" includes step, foster, adoptive, relative or other substitute mother.

	Birth Mother				Other Mother			
	No	Yes	Don't know	Does not apply	No	Yes	Don't know	Does not apply
a. Drug problem	❍	❍	❍	❍	❍	❍	❍	❍

	No	Yes	Don't know	Does not apply	No	Yes	Don't know	Does not apply
b. Alcohol problem	○	○	○	○	○	○	○	○
c. Illness/ Disability	○	○	○	○	○	○	○	○
d. Mental health problem	○	○	○	○	○	○	○	○
e. Problem with the law	○	○	○	○	○	○	○	○

11.   Does your father have a(n): For this question the "Other" includes step, foster, adoptive, relative or other substitute mother.

	Birth Father				Other Father			
	No	Yes	Don't know	Does not apply	No	Yes	Don't know	Does not apply
a. Drug problem	○	○	○	○	○	○	○	○
b. Alcohol problem	○	○	○	○	○	○	○	○
c. Illness/ Disability	○	○	○	○	○	○	○	○
d. Mental health problem	○	○	○	○	○	○	○	○
e. Problem with the law	○	○	○	○	○	○	○	○

12.   Do any of your siblings have a(n):   For this question the "Other" includes step, foster, or adoptive siblings.

	Birth Sibling(s)				Other Sibling(s)			
	No	Yes	Don't know	Does not apply	No	Yes	Don't know	Does not apply
a. Drug problem	○	○	○	○	○	○	○	○
b. Alcohol problem	○	○	○	○	○	○	○	○
c. Mental health problem	○	○	○	○	○	○	○	○
d. Illness/Disability	○	○	○	○	○	○	○	○

e. Problem with the law	○	○	○	○	○	○	○	○

13. How much conflict is there in the family you currently live?
    ○ None/Not at all
    ○ A little
    ○ A fair amount
    ○ A lot

14. How much fighting or arguing is there in the family you live with?
    ○ None/Not at all
    ○ A little
    ○ A fair amount
    ○ A lot

15. How pleasant is it for you to live with the people in your current home?
    ○ None/Not at all
    ○ A little
    ○ A fair amount
    ○ A lot

16. In the past 30 days, how much (or how often) have you:

	None/Not at all	A little	A fair amount	A lot
a. Eaten a meal together with the people you live with	○	○	○	○
b. Done household chores or work around the house	○	○	○	○

16a. In the past 30 days, how much (or how often) have you:

	None/Not at all	A little	A fair amount	A lot
c. Had fights or arguments with those in your current home	○	○	○	○
d. Misled or lied to the family you live with	○	○	○	○

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e. Resisted doing what other family members wanted	○	○	○	○
f. "Messed" up the house or broken things	○	○	○	○
g. Stolen from or taken things from the family you live with	○	○	○	○

17.   How well do you get along with the people you live with?

	None/Not at all	A little	A fair amount	A lot	Does not apply
a. Mother (or mother figure)	○	○	○	○	○
b. Father or (father figure)	○	○	○	○	○
c. Birth or other siblings	○	○	○	○	○
d. Other family members or relatives	○	○	○	○	○

18.   How difficult do you find it to talk to your Mother (or mother figure) about things that bother you?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot
   ○ Does not apply

19. How difficult do you find it to talk to your Father (or father figure) about things that bother you?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot
   ○ Does not apply

20. How close do you feel to your Mother (or mother figure)?
- ❍ None/Not at all
- ❍ A little
- ❍ A fair amount
- ❍ A lot
- ❍ Does not apply

21. How close do you feel to your Father (or father figure)?
- ❍ None/Not at all
- ❍ A little
- ❍ A fair amount
- ❍ A lot
- ❍ Does not apply

22. How much do you feel you can trust what your Mother (or mother figure) tells you?
- ❍ None/Not at all
- ❍ A little
- ❍ A fair amount
- ❍ A lot
- ❍ Does not apply

23. How much do you feel you can trust what your Father (or father figure) tells you?
- ❍ None/Not at all
- ❍ A little
- ❍ A fair amount
- ❍ A lot
- ❍ Does not apply

24.   Here are some issues that young people have with parents. Do any of these apply to you?

	Mother/Mother Figure					Father/Father Figure				
	None/Not at all	A little	A fair amount	A lot	Does not apply	None/Not at all	A little	A fair amount	A lot	Does not apply
a. Disappointed in you	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
b. Criticizes you	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

c. Intrudes too much in your personal life, or tries to control you too much	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
d. Favors other sister(s) or brother(s)	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
e. Unfair with you about money	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
f. Doesn't listen or hear what you have to say to her/him	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
g. Angry with you	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
h. Not close to you	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
i. Doesn't give you good advice when you need it	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
j. Doesn't set a good example	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
k. Threatens you too much	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
l. Too strict	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
m. Not strict enough	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
n. Expects you to do too much around the house	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍
o. Doesn't understand you	❍	❍	❍	❍	❍	❍	❍	❍	❍	❍

p. Doesn't trust you	○	○	○	○	○	○	○	○	○	○
q. Dissatisfied with your behavior and/or attitude	○	○	○	○	○	○	○	○	○	○
r. Dissatisfied with how you do chores around the house	○	○	○	○	○	○	○	○	○	○

25. How many times have you moved in your lifetime?
- ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 or more

26. How many times have you run away from home?
- ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 or more

27. Do the people you live with get help from social services?

○ No
○ Yes
○ Don't know

28. How happy are you about the way you get along with the people you live with?
    ○ None/Not at all
    ○ A little
    ○ A fair amount
    ○ A lot

29. How satisfied are you with your current living arrangement?
    ○ None/Not at all
    ○ A little
    ○ A fair amount
    ○ A lot

30. How many days in the past 30 days have you experienced any problems with the family you currently live with?
    ○ 0
    ○ 1
    ○ 2
    ○ 3
    ○ 4
    ○ 5
    ○ 6
    ○ 7
    ○ 8
    ○ 9
    ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
       ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
    ○ 30

31. How troubled or bothered have you been in the past 30 days by family problems?
    ○ None/Not at all
    ○ A little
    ○ A fair amount
    ○ A lot

32. How important to you now is getting help for family problems?
    ○ None/Not at all

- ○ A little
- ○ A fair amount
- ○ A lot

Psychological

1a. How many different times have you gotten a course of treatment for mental health in:

	0	1	2	3	4	5 or more
a. an outpatient office or clinic	○	○	○	○	○	○

1b. How many different times have you gotten a course of treatment for mental health in:

	0	1	2	3	4	5 or more
b. an inpatient hospital	○	○	○	○	○	○

1c. How many different times have you gotten a course of treatment for mental health in:

	0	1	2	3	4	5 or more
c. a residential group home	○	○	○	○	○	○

2.   Do you ever:

	No	Yes, earlier (in your lifetime)	Yes, now (within the past 30 days)	Yes, both now and earlier
a. feel as though you can do most things if you try	○	○	○	○

2a. Do you ever have any of the following feelings and reactions?

	No	Yes, earlier (in your lifetime)	Yes, now (within the past 30 days)	Yes, both now and earlier
b. feel you lack problem-solving or decisionmaking skills	○	○	○	○
c. you are too shy	○	○	○	○
d. you don't belong or fit in	○	○	○	○
e. feel lonely even when you are with people	○	○	○	○
f. you are easily discouraged	○	○	○	○
g. you are not as smart as others	○	○	○	○
h. hard to talk about your feelings	○	○	○	○
i. sad or depressed	○	○	○	○
j. feel like you should be punished for your sins	○	○	○	○
k. feelings are easily hurt	○	○	○	○
l. get into fights or arguments easily	○	○	○	○
m. do angry things you cannot control	○	○	○	○
n. easily upset over small things	○	○	○	○
o. anxious or worried a lot	○	○	○	○
p. have nightmares	○	○	○	○

q. cannot go to sleep without medication	❍	❍	❍	❍

r. little interest or pleasure in things	❍	❍	❍	❍
s. feel hopeless about the future	❍	❍	❍	❍
t. feel inferior to others	❍	❍	❍	❍
u. feel that you are worthless	❍	❍	❍	❍
v. get bored easily	❍	❍	❍	❍
w. hard to focus or difficulty concentrating	❍	❍	❍	❍
x. unable to remember things	❍	❍	❍	❍
y. daydream a lot	❍	❍	❍	❍
z. always telling lies	❍	❍	❍	❍
aa. feel people cannot be trusted	❍	❍	❍	❍
bb. feel you are being watched or talked about by others	❍	❍	❍	❍
cc. others are against you or out to get you	❍	❍	❍	❍
dd. people are unfriendly or dislike you	❍	❍	❍	❍
ee. experience hallucinations (see or hear things that may not really be there)	❍	❍	❍	❍

ff. feel that things are not real	○	○	○	○
gg. get crazy ideas in your head	○	○	○	○
hh. something inside you is controlling you	○	○	○	○
ii. something is wrong in your mind	○	○	○	○
jj. have thoughts of killing yourself	○	○	○	○
kk. feel like injuring or hurting yourself	○	○	○	○
ll. afraid you will hurt someone physically	○	○	○	○
mm. feel you would be better off dead	○	○	○	○
nn. sudden mood swings for no apparent reason	○	○	○	○
oo. more energy than is normal for most people	○	○	○	○
pp. special powers	○	○	○	○
qq. very fast or racing thoughts	○	○	○	○
rr. you are happy for no reason	○	○	○	○

3. Are the above feelings, thoughts, and reactions only present when you are using drugs or alcohol?
- ○ No
- ○ Yes
- ○ Does not apply

4. Have you taken prescribed medication for a mental health problem?

❍ No
❍ Yes

5. If so, are you taking them now?
   ❍ Never
   ❍ Sometimes
   ❍ Often
   ❍ Always
   ❍ Does not apply

6. How many times have you attempted suicide?
   ❍ None
   ❍ 1
   ❍ 2
   ❍ 3
   ❍ 4
   ❍ 5 or more

7. Have you ever been the victim of or witnessed a violent crime? (like being mugged, assaulted or badly injured.)
   ❍ No
   ❍ Yes, once
   ❍ Yes, more than once

8. Have you ever been physically abused?
   ❍ No
   ❍ Yes, once
   ❍ Yes, more than once

9. Have you ever been sexually abused?
   ❍ No
   ❍ Yes, once
   ❍ Yes, more than once

10. Have you ever been emotionally abused?
    ❍ No
    ❍ Yes, once
    ❍ Yes, more than once

11. How much does the above violence and abuse bother you now?
    ❍ None/ Not at all
    ❍ A little
    ❍ A fair amount

○ A lot

12. In the past 30 day, have you had mental health problems?
   ○ None
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
      ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
   ○ 30

13. If so, how much did those problems bother you?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

14. How important is it to you now to get help for these mental health problems?
   ○ None/ Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

Legal

1.   Here are some activities that young people do but are against the law.
Please answer from the following choices about your involvement in these
activities?

	No	Yes, earlier (in your lifetime)	Yes, now (within the past 30 days)	Yes, both now and earlier
a. Truancy (unexcused school absences)	○	○	○	○
b. Shoplifting	○	○	○	○

c. Selling drugs or trafficking	○	○	○	○
d. Disorderly conduct	○	○	○	○
e. Driving under the influence of substances or while intoxicated	○	○	○	○
f. Other major driving violations	○	○	○	○
g. Auto theft	○	○	○	○
h. Serious vandalism (purposely damaging the property of others)	○	○	○	○
i. Burglary or breaking and entering	○	○	○	○
j. Robbery	○	○	○	○
k. Assault and battery	○	○	○	○
l. Possession of a weapon	○	○	○	○
m. Rape or other sexual crime	○	○	○	○
n. Prostitution or pimping	○	○	○	○
o. Arson	○	○	○	○
p. Murder, homicide, or manslaughter	○	○	○	○
q. Theft	○	○	○	○
r. Arrested or picked up by the police	○	○	○	○
s. Locked up or detained in a jail or detention center	○	○	○	○

t. Placed on probation or parole	○	○	○	○
u. Violated probation or parole	○	○	○	○
v. Charged with a crime	○	○	○	○
w. Convicted of a crime	○	○	○	○

2.   How old (in years) were you when you started with illegal activities or behaviors?
   ○ 11 years old or younger
   ○ 12
   ○ 13
   ○ 14
   ○ 15
   ○ 16
   ○ 17
   ○ 18
   ○ 19
   ○ 20
   ○ 21

3. How many times in your life have you been arrested or picked up by the police?
   ○ None
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 or more

4. How many times in your life have you been locked up or detained in a jail or detention center?
   ○ None
   ○ 1

- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8
- ❍ 9
- ❍ 10 or more

5. How many times in your life have you been charged with a crime?
- ❍ None
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8
- ❍ 9
- ❍ 10 or more

6. How many times in your life have you been convicted of a crime?
- ❍ None
- ❍ 1
- ❍ 2
- ❍ 3
- ❍ 4
- ❍ 5
- ❍ 6
- ❍ 7
- ❍ 8
- ❍ 9
- ❍ 10 or more

7. How many times in your life have you been on probation or parole?
- ❍ None
- ❍ 1
- ❍ 2
- ❍ 3

○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 or more

8. How many times in your life have you violated probation or parole?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 or more

9. How many days in the past 30 days have you engaged in illegal activities?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
○ 30

10. How many days in the past 30 days have you had problems related to illegal activities or behaviors?
○ None
○ 1
○ 2

○ 3

○ 4

○ 5

○ 6

○ 7

○ 8

○ 9

○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29

○ 30

11. How troubled or bothered have you been in the past 30 days by your
illegal activities or behaviors? ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

12. How serious do you feel are your present problems with the law?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

13. How important to you now is getting help for your illegal behavior problems?
   ○ None/Not at all
   ○ A little
   ○ A fair amount
   ○ A lot

Alcohol and Drugs

1. How many times in your life did you smoke or chew tobacco?
   ○ None
   ○ Experimented (up to 3 times)
   ○ Used 4 or more times

2. How many days in the past 30 days did you use tobacco?
   ○ None
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
   ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
   ○ 30

3. How many cigarettes did you usually smoke on the days you smoked tobacco?
   ○ None
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18
   ○ 19
   ○ 20 or more
   ○ Does not apply

4. How many times in your life did you drink alcohol?
   ○ None
   ○ Experimented (up to 3 times)
   ○ Used 4 or more times

5. How many days in the past 30 days did you drink alcohol?
   ○ None
   ○ 1

○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
○ 30

6. How many drinks of alcohol did you usually consume on the days you drank
alcohol? (One drink = either 1 beer, or 1 glass of wine, or 1 mixed drink, or one
shot)
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 or more
○ Does not apply

7. How many times did you get drunk in the past 30 days?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29

❍ 30

8. How many times in your life have you smoked marijuana?
   ❍ None
   ❍ Experimented (up to 3 times)
   ❍ Used 4 or more times

9. How many days in the past 30 days have you smoked marijuana?
   ❍ None
   ❍ 1
   ❍ 2
   ❍ 3
   ❍ 4
   ❍ 5
   ❍ 6
   ❍ 7
   ❍ 8
   ❍ 9
   ❍ 10 ❍ 11 ❍ 12 ❍ 13 ❍ 14 ❍ 15 ❍ 16 ❍ 17 ❍ 18 ❍ 19 ❍ 20 ❍ 21 ❍ 22
   ❍ 23 ❍ 24 ❍ 25 ❍ 26 ❍ 27 ❍ 28 ❍ 29
   ❍ 30

10. How many joints (about ½ gram) or the equivalent did you usually smoke on the days you smoked marijuana?
    ❍ None
    ❍ 1
    ❍ 2
    ❍ 3
    ❍ 4
    ❍ 5 or more

11. How many times in your life did you use stimulants like uppers, speed, amphetamines, crystal meth, ecstasy (MDMA), Ritalin, or Adderall?
    ❍ None
    ❍ Experimented (up to 3 times)
    ❍ Used 4 or more times

12. How many days in the past 30 days did you use stimulants?
    ❍ None
    ❍ 1
    ❍ 2
    ❍ 3

○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
○ 30

13. How many times in your life did you use cocaine or crack?
○ None
○ Experimented (up to 3 times)
○ Used 4 or more times

14. How many days in the past 30 days did you use cocaine or crack?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
○ 30

15. How many times in your life did you use tranquilizers or sedatives like depressants,
downers, date rape drugs, Xanax, Klonopin, Ativan, or barbiturates?
None
Experimented (up to 3 times)
○ Used 4 or more times

16. How many days in the past 30 days did you use tranquilizers or sedatives?
○ None
○ 1
○ 2
○ 3
○ 4

- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
  ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
- ○ 30

17. How many times in your life did you use hallucinogens like LSD (acid), mushrooms, or PCP?
None
Experimented (up to 3 times)
○ Used 4 or more times

18. How many days in the past 30 days did you use hallucinogens?
- ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
  ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
- ○ 30

19. How many times in your life did you use steroids or growth hormone?
○ None
Experimented (up to 3 times)
Used 4 or more times

20. How many days in the past 30 days did you use steroids or growth hormone?
- ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5

○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
○ 30

21. How many times in your life did you use inhalants like glue, paint, or gasoline?
○ None
Experimented (up to 3 times)
Used 4 or more times

22. How many days in the past 30 days did you use inhalants like glue, paint, or gasoline?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
○ 30

23. How many times in your life did you use opioids such as heroin, morphine, oxycodone, fentanyl, methadone, Percocets, hydrocodone, Loratabs, or codeine?
○ None
○ Experimented (up to 3 times)
○ Used 4 or more times

24. How many days in the past 30 days did you use opioids?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6

○ 7

○ 8

○ 9

○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29

○ 30

25. Did you ever inject or shoot up any drugs?
   ○ None
   ○ Experimented (up to 3 times)
   ○ Used 4 or more times

26. How many days in the past 30 days have you injected or shot up drugs?
   ○ None
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
   ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
   ○ 30

27. How many days in the past 30 days have you used more than one substance (including alcohol but not tobacco)?
   ○ None
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
   ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29

○ 30

28. How old were you when you first started using drugs or alcohol?
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19
   ○ 20
   ○ Does not apply

29. Of the substance (drug or alcohol) you use the most, how many days have you been able to go without using?
   ○ None
   ○ 1
   ○ 2
   ○ 3
   ○ 4
   ○ 5
   ○ 6
   ○ 7
   ○ 8
   ○ 9
   ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22
   ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28
   ○ 29
   ○ 30 or more
   ○

30. What is your drug of choice?
   ○ Tobacco
   ○ Alcohol
   ○ Marijuana
   ○ Stimulants
   ○ Tranquilizers/Sedatives
   ○ Cocaine/Crack
   ○ Hallucinogens
   ○ Steroids/Hormones
   ○ Inhalants
   ○ Opioids
   ○ Does not apply

31. Did you ever need larger and larger amounts of drugs or alcohol to get high?

○ Never
○ Sometimes
○ Often
○ Always
○ Does not apply

32. Have you ever tried to cut down on any drug or alcohol but found that you couldn't?
○ Never
○ Sometimes
○ Often
○ Always
○ Does not apply

33. Has anyone ever told you that you drink or use drugs too much?
○ Never
○ Sometimes
○ Often

34. How many different times have you received treatment or counseling for alcohol or drug abuse problems?
○ None
○ 1
○ 2
○ 3
○ 4
○ 5
○ 6
○ 7
○ 8
○ 9
○ 10 or more

35. Have you every received treatment for alcohol or drug abuse in a hospital, residential setting, or rehabilitation center?
○ No, never
○ Yes, once
○ Yes, more than once

36. In the past 30 days, have you used drugs or alcohol in or during school?
○ No, never
○ Yes, once
○ Yes, more than once

37. How many days in the past 30 days have you ever sold drugs?
- ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22 ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
- ○ 30

38. In the past 30 days have you gotten in trouble with your parents or guardians over your drug or alcohol use?
- ○ No, never
- ○ Yes, once
- ○ Yes, more than once

39. How many days in the past 30 days have you experienced problems with alcohol or drug use? ○ None
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10 ○ 11 ○ 12 ○ 13 ○ 14 ○ 15 ○ 16 ○ 17 ○ 18 ○ 19 ○ 20 ○ 21 ○ 22 ○ 23 ○ 24 ○ 25 ○ 26 ○ 27 ○ 28 ○ 29
- ○ 30

40. How troubled or bothered have you been in the past 30 days by your drug and alcohol problems?
- ○ None/Not at all
- ○ A little
- ○ A fair amount
- ○ A lot

41. How harmful to your health is the continued use of drugs and alcohol?
- ❍ None/Not at all
- ❍ A Little
- ❍ A fair amount
- ❍ A lot

42. How important to you now is getting help for your alcohol or drug use?
- ❍ None/Not at all
- ❍ A little
- ❍ A fair amount
- ❍ A lot

Spirituality

1. How spiritual are you?
- ❍ None/Not at all
- ❍ A little
- ❍ A fair amount
- ❍ A lot

2. On average how often do you pray in private?
- ❍ Not at all
- ❍ A few times each year
- ❍ Every month
- ❍ Every week
- ❍ Every day

3. On average how often do you privately study religious literature like the Bible, Torah, Koran, or Bhagavad-Gita?
- ❍ Not at all
- ❍ A few times each year
- ❍ Every month
- ❍ Every week
- ❍ Every day

4. How often do you attend religious worship services at a church, synagogue, mosque, or temple?
- ❍ Not at all
- ❍ A few times each year
- ❍ Every month
- ❍ Every week
- ❍ Every day

5. Do you donate your time or money to support a religious organization?
   - ❍ None/Not at all
   - ❍ A little
   - ❍ A fair amount
   - ❍ A lot

6. Does some spiritual or religious purpose provide direction for your life?
   - ❍ None/Not at all
   - ❍ A little
   - ❍ A fair amount
   - ❍ A lot

7. Do your closest friends share your spiritual or religious view?
   - ❍ None/Not at all
   - ❍ A little
   - ❍ A fair amount
   - ❍ A lot

8. Do the people you live with (usually your family) share your spiritual or religious view?
   - ❍ None/Not at all
   - ❍ A little
   - ❍ A fair amount
   - ❍ A lot

9. Does your faith or religion influence decision-making in your everyday life?
   - ❍ None/Not at all
   - ❍ A little
   - ❍ A fair amount
   - ❍ A lot

10. Does your faith or religion help you to do what is right?
    - ❍ None/Not at all
    - ❍ A little
    - ❍ A fair amount
    - ❍ A lot

11. Does your faith or religion help you cope with life's problems?
    - ❍ None/Not at all
    - ❍ A little
    - ❍ A fair amount
    - ❍ A lot

Carilion Medical Center

DATA TRANSFER AGREEMENT
Deidentified Data

This Data Transfer Agreement ("Agreement") is entered into and effective as of _____ of _____, 2017 ("Effective Date"), by and between the CARILION MEDICAL CENTER, a Virginia nonprofit corporation having a business address at 1906 Belleview Avenue, Roanoke, Virginia 24014 ("Carilion"), and Virginia Polytechnic Institute and State University, a Virginia nonprofit institute of higher learning, with a place of business at North End Center, 300 Turner Street, NW, Suite 4200 (0170), Blacksburg, VA 24061 ("Recipient").

In consideration of the mutual promises contained herein, the parties hereby agree as follows:

1. Carilion will provide Recipient with the following human data set, subject medical record information ("Data"). Carilion will use reasonable efforts to provide Data in the quantities requested by Recipient, but Carilion cannot guarantee that any specific quantity of Data will be available. Data provided pursuant to this Agreement was collected or will be collected in accordance with the standard patient consent procedures of Carilion in effect at the time of collection and subject to approval by Carilion's IRB.

2. Recipient shall use said Data only in the research described in Exhibit A (Scope of Activities). Recipient agrees that the Data will be used only by those of its employees and agents with a need to know in furtherance of performance of the Research and who are bound by terms of non-use and nondisclosure substantially similar to the terms of this Agreement. Recipient shall have no right under this Agreement to use the Data for commercial purposes. Recipient represents and certifies that: (i) it has obtained appropriate Institutional Review Board ("IRB") approvals to conduct the Research or the IRB's written confirmation that no such approvals are required, a copy of which is attached within Exhibit B; (ii) its use and handling of the Data and conduct of the Research will comply with all applicable state and Federal laws and regulations, including applicable DHHS, NIH and FDA regulations and those regulations of the Code of Federal Regulations at 45 CFR Part 46.

3. Data provided to Recipient will not be accompanied by any Protected Health Information (as defined in 45 C.F.R. § 164.501) or Individually Identifiable Health Information (as defined in 42 U.S.C. § 1320d), nor any codes or links that could be associated with such information.

4. This Agreement shall be effective through January 9, 2018 ("Term"). At the end of the Term, Recipient will either enter into good faith negotiation with Carilion to extend the period of this Agreement, or else return or destroy the Data, as directed by Carilion, within thirty (30) days. Either party may terminate this Agreement at any time upon thirty (30) days written notice to the other party. Articles 5 through 11 shall survive the termination or expiration of this Agreement.

5. The Data represents a significant investment on the part of Carilion and are considered proprietary to Carilion. It is understood and agreed by Recipient that this Agreement in no way grants or confers to Recipient any right or license under any patents or proprietary interests held by Carilion, nor does it restrict Carilion's right to distribute the Data to other entities. Recipient shall promptly disclose to Carilion any inventions or discoveries, whether patentable or not,

developed in the performance of the Research ("Inventions"), and Carilion shall hold such disclosure in confidence. Neither party shall attempt to obtain patent coverage on any Inventions which occur as a result of the use of the Data in the performance of the Research without first notifying the other party. It understood that this Agreement in no way alters any rights that the U.S. government might have in the results of the Research.

6. The parties agree that the Data shall be treated as Carilion's Confidential Information; provided however that Confidential Information shall not include information which: (a) was known to Recipient prior to receipt hereunder, as demonstrated by written records; or (b) at the time of disclosure was generally available to public, or which after disclosure becomes generally available to the public through no fault attributable to Recipient; or (c) is hereafter made available to Recipient from any third party having a legal right to do so; or (d) is required to be disclosed by law, regulation or governmental or judicial order, provided that fulfillment of such a legal obligation does not release Recipient from the remaining confidentiality obligations of this Article 6; or (e) is independently developed by or for recipient without breach of this agreement by persons who have not been exposed to the Confidential Information.

Recipient agrees that Carilion shall have the right to use and disclose such Research Results for any internal research or educational purposes. In addition, Carilion will be free to use Research Results for publication purposes provided that recognition is given to Recipient and Recipient Scientist as may be scientifically appropriate. In any publication by Recipient or Recipient Scientist resulting from the Research using the Data, Recipient agrees to acknowledge Carilion as the provider of the Data. The party intending to publish results from the Research shall provide the other party with the opportunity to review, in confidence, any proposed abstract, manuscript, or presentation describing such results thirty (30) days prior to its submission for publication so that Confidential Information of the non-publishing party can be deleted and patent protection sought according to the terms of this Agreement if desired and applicable.

7. Carilion represents and certifies that it owns and/or has absolute right to provide the Data hereunder. The Data is being provided by Carilion AS IS WITHOUT ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. In no event shall Carilion be liable for any indirect, incidental, special, consequential, punitive, or other damages resulting from the performance or non-performance of this Agreement, obligations of either party under this Agreement or termination of this Agreement for any reason, including, but not limited to, damages for loss of profits, even if Carilion had been advised of the possibility of such damages. Recipient agrees to assume all liability for damages that arise from its negligent or wrongful use, storage or disposal of Data.

8. Recipient agrees that it shall not use the name of Carilion or its employees in any advertising or publicity material or in any representation or statement in relation to the Research, and that it shall not authorize others to do so, without first having obtained written permission from Carilion.

9. This understanding constitutes the entire Agreement of the parties with respect to the provision of the Data to Recipient by Carilion and may be amended only by written agreement of both parties. Neither this Agreement nor any right, remedy obligation or liability arising hereunder or by reason hereof shall be assigned by either party without the prior written consent of the non-assigning party.

10. Any notice required to be given under this Agreement, and any communication associated with

the performance of this Agreement shall be deemed made, if delivered either to the address given below or to such other address as may hereafter be specified in writing by the parties:

If to Recipient: Office of Sponsored Programs
            John C Rudd
            NEC, Ste 4200
            300 Turner Street, NW
            Blacksburg, VA 24061

With Copy to: Fred Piercy (piercy@vt.edu)

If to Carilion: Andrea Bidanset
            Director of Clinical Trials
            Research and Development
            101 Elm Avenue
            Roanoke, VA 24013

Notice shall be deemed to have been made, if by hand upon the date so delivered; if by registered or certified mail, postage prepaid and return receipt requested, upon third day after deposit in the United States mail; if by express courier service on the date actually delivered; and if by facsimile upon receipt.

IN WITNESS WHEREOF, the parties have executed this Agreement by their duly authorized officers.

For CARILION MEDICAL CENTER

_____
_____
Name: Daniel Harrington, MD
Title: Vice President, Academic Affairs

Date: _____

For VIRGINIA TECH POLYTECHNIC INSTITUTE & STATE UNIVERSITY

_____
Name: John Rudd
Title: VP Sponsored Programs Administration

Date: _____

Exhibit A

Purpose: All data provided to VT Researchers will be completely deidentified. VT Researchers will use data from the Adolescent Drug & Alcohol Assessment [ADAD] previously collected through assessments conducted at Carilion Clinic by Dr. Cheri Hartman. She used the ADAD to assess medical, school, employment, social life and relationships, family relationships, psychological, delinquent and criminal activity, drug use and alcohol use. The purpose of the present study is to research the association between quality gender-specific parent-child relationships and frequency and types of substances used.

Exhibit B:

VirginiaTech

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu
website http://www.irb.vt.edu

MEMORANDUM

DATE:	December 15, 2016
TO:	Fred Piercy, Jamie Marie West, Cheryl Walker Hartman
FROM:	Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)
PROTOCOL TITLE:	Gender-Specific Parent-Child Relationship Factors and Substance Use among At-Risk Adolescents
IRB NUMBER:	16-569

Effective December 15, 2016, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

http://www.irb.vt.edu/pages/responsibilities.htm

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As:	**Exempt, under 45 CFR 46.110 category(ies) 4**
Protocol Approval Date:	**December 15, 2016**
Protocol Expiration Date:	**N/A**
Continuing Review Due Date*:	**N/A**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Invent the Future