Exploring Potential Mediators of the Relationship between Adolescent Religiosity and Delinquency Using the Risk and Resilience Framework

Dissertation

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Abstract

Adolescence is a key time in the life cycle stage. Many factors impact youth’s ability to successfully transition from adolescence to fully functioning adults, while other factors assist youth with this transition. The purpose of this dissertation is to examine risk and protective factors and their impact on adolescent delinquency outcomes. In particular, this dissertation explores the relationship between adolescent religiosity, often identified in the literature as a protective factor, and delinquency. The risk and resilience literature has stated a need to move beyond identifying risk and protective factors to understanding the mechanisms through which they operate. This dissertation examines whether association with substance using peers and self esteem mediates the relationship between religiosity and delinquency.

Regarding methods, this dissertation uses data from the 2008 Monitoring the Future 12th grader questionnaires. This is a nationally representative sample of adolescents. Religiosity is the key independent variable of interest. The risk and protective factors included in the study, health, past victimization, and school engagement, function as independent variables as well. The mediating variables are self esteem and association with delinquent peers. The dependent variable is adolescent delinquency, which consists of minor and serious drug use, truancy, and crime. Structural equation modeling using Mplus is conducted to analyze the mediation relationship. A
secondary analysis involving multiple group analysis with gender and race will attempt to be conducted.

The findings reveal that religiosity is modestly inversely related to delinquency. The relationship between the other risk and protective factors (health, school, and past victimization) and delinquency changes in different analyses. Overall, past victimization is strongly positively correlated with delinquency, health is weakly inversely correlated with delinquency, and school engagement is not significantly correlated with delinquency. There was not support for association with substance using peers and self esteem as mediators between religiosity and delinquency.

Nevertheless, this dissertation provides insight into the religious lives of adolescents. These results also provide more information about risk and protective factors and where more research and attention is needed. Implications for social work practice and policy are discussed.
Dedication

This dissertation is dedicated to my sweet sister Clara
Acknowledgements

“The Lord will work out his plans for my life—for your faithful love, O Lord, endures forever.” Psalm 138:8

I have many people to thank and acknowledge for helping me get to this point. If it were not for the many people I have relied on for strength, wisdom, and guidance, I am not sure where I would be. My family and friends have been instrumental in supporting me throughout this process, especially my mother, Sheila Love, aunts, Sonya Nagele and Sharon Rogers, and grandmother, Mildred Bailey. These women have been with me every step of the way. I thank my father, Bryan Harris, Brenda Harris and Lamar Love for their support and encouragement.

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Field of Study

Major Field: Social Work
# Table of Contents

Abstract .......................................................................................................................... ii

Dedication ......................................................................................................................... iv

Acknowledgements ............................................................................................................. v

Vita ................................................................................................................................... vii

List of Tables ....................................................................................................................... x

List of Figures ..................................................................................................................... xii

Chapter 1: Introduction .................................................................................................... 1

1.1 Problem statement ......................................................................................................... 1
1.2 Adolescent delinquency ................................................................................................. 2
1.3 Summary of limitations of the literature ...................................................................... 7
1.4 Contribution of the study ............................................................................................... 8
1.5 Importance of the study ................................................................................................. 9
1.6 Monitoring the Future data set .................................................................................... 12
1.7 Research objectives ....................................................................................................... 13

Chapter 2: Literature review ............................................................................................. 15

2.1 Purpose of the study .................................................................................................... 15
2.2 Overview of Adolescence ............................................................................................ 16
2.3 Role of religion in adolescence .................................................................................... 24
2.4 Theories of adolescent delinquency ............................................................................. 33
2.5 Risk and resilience framework ...................................................................................... 38
2.6 Summary of existing research by topic ....................................................................... 43
2.7 Strengths of existing research on risk and protective factors .................................. 54
2.8 Gaps in existing literature: Mechanism for risk and protective factors .................. 54
2.9 Directions of future research ....................................................................................... 56

Chapter 3: Methods ......................................................................................................... 59
List of Tables

Table 1: Latent constructs and observed items………………………………………………..67
Table 2: Descriptive statistics for sociodemographic variables……………………………90
Table 3: Descriptive statistics for other risk and protective factors and mediators……..91
Table 4: Correlation matrix…………………………………………………………………..92
Table 5: F and t statistic results for religiosity, selected sociodemographic variables,….97
and delinquency
Table 6: Chi square values for religious service attendance and key…………………99
sociodemographic variables
Table 7: Chi square values for religious importance and key sociodemographic………99
Variables
Table 8: Chi square values for religious preference and key sociodemographic………100
Variables
Table 9: Goodness of fit for CFA of independent variables……………………………..105
Table 10: Risk and protective factor measurement model unstandardized and ……..109
standardized parameter estimates and test statistic
Table 11: Goodness of fit statistics for CFA of mediating variables……………………111
Table 12: Mediating variables measurement model unstandardized and…………………112
standardized parameter estimates and test statistic
Table 13: Goodness of fit statistics for CFA for delinquency variables…………………114
Table 14: Delinquency variables measurement model unstandardized and……………115
standardized parameter estimates and test statistic
Table 15: Goodness of fit statistics for CFA of all constructs…………………………..116
Table 16: Measurement model unstandardized and standardized parameter estimates..117
and test statistic

Table 17: Goodness of fit statistics for SEM model………………………………….119

Table 18: Path model coefficients of risk and protective factors and delinquency,……120
unstandardized and standardized

Table 19: SEM measurement model unstandardized and standardized parameter……121
estimates and test statistic

Table 20: Goodness of fit statistics for SEM model with mediating variables…………123

Table 21: SEM with mediating variables measurement model unstandardized and……124
standardized parameter estimates and test statistic

Table 22: Path model coefficients of risk and protective factors to delinquency and….126
religiosity, unstandardized and standardized

Table 23: Indirect path model coefficients for religiosity and delinquency,……………127
unstandardized and standardized
List of Figures

Figure 1: Proposed model.................................................................65
Figure 2: Measurement model for risk and protective factors..................103
Figure 3: Measurement model for mediating variables.............................110
Figure 4: Measurement model of delinquency variables...........................113
Figure 5: Path model of risk and protective factors and delinquency...........120
Figure 6: SEM with mediating variables...............................................123
Chapter 1: Introduction

1.1 Problem Statement

Adolescent delinquency and problem behavior is a significant issue in society. The United States Census estimates that between 2006 and 2008, the population consisted of about 21.6 million adolescents ages 15 through 19 (U.S. Census, 2010). In 2007, about 1,666,100 cases appeared in juvenile court and in 2008 around 2.11 million youth were arrested (Puzzanchera & Kang, 2008; Puzzanchera, 2009). Of course, this does not encapsulate the total number of delinquent acts committed, but it helps in understanding the scope of this issue. Adolescent arrest rates have remained constant since 1975, but the types of crimes committed by teens have changed (Dryfoos, 1990; MacNeil, Stewart, & Kaufman, 2000). Regarding trends of substance use, high school seniors’ use of cocaine has decreased between 1992 and 2006 while rates of marijuana use have increased (University of Michigan, 2007). Abuses of psychotherapeutic medication have continued to increase since the mid-1980s (Adolescent Substance Abuse Knowledge Base [ASK], 2007). Another issue is teen pregnancy. While the United States teen pregnancy rate has decreased by 36% since 1990, it is still higher than in any other industrial country (Guttmacher, 2006). Dropping out of school is also problem behavior. In 2007, 8.7% of the US population of youth ages 16 to 24 had not finished high school and were not enrolled in school (Synder, Dillow, & Hoffman, 2008).
The purpose of this study is to summarize existing theories and research that examines adolescent delinquency, identify strengths and limitations of this work, and propose empirical research that addresses these limitations. This dissertation will examine the impact of risk and protective factors found in the Monitoring the Future data set on adolescent delinquency using the risk and resilience framework. Specifically, the key variable of interest in this study is religiosity. Analyses will focus on understanding the mechanism through which religiosity impacts adolescent delinquency. The following mediation hypothesis is proposed: association with substance using peers and self esteem mediate the relationship between religiosity and delinquency. The other risk and protective factors will be included in this mediation model too. A secondary analysis consisting of a multiple group analysis of the mediation hypothesis using gender and race will be done. This analysis will be evaluated using structural equation modeling and the findings will be discussed as they relate to risk and resilience literature and social work practice, theory, and policy.

1.2 Adolescent delinquency

During the twentieth century, the life cycle stage of adolescence, ages 12 to 19, developed as the time for youth to transition into adulthood (Austrian, 2002; Repucci, 1999). Adolescence is a complex phase that is more than just age or psychological and physical changes. Culture, politics, religion, and economic forces present adolescents with new identities (Austrian, 2002). The transition into adulthood is accompanied by various laws giving adult privileges to adolescents, such as driving, voting, and enlisting
in the army (Austrian, 2002). This is a fragile time for youth, since various factors can prevent them from transitioning into independent fully functioning adults (Lanctôt, Cernkovich, & Giordano, 2007). Youth who commit violent crimes enter the juvenile justice system, increasing their likelihood of being incarcerated as adults. Adolescents experimenting with illegal substances could develop substance abuse or dependence disorders that threaten their ability to function as adults. Engaging in delinquency severely disrupts this developmental and socialization stage.

The life trajectory for incarcerated adolescents after release from a detention center, jail, or prison follows a predictable pattern. These adolescents will not, among other things, receive an adequate education or obtain work resulting in a livable wage (Harlow, 2003; Rose & Clear, 2001). As a result, delinquent adolescents are at severe risk for poverty, homelessness, substance abuse, poor physical health, and recidivism (Rose & Clear, 2001). Understanding what protects adolescents from engaging in delinquency has the potential to radically alter their life course, especially for urban minority adolescent males, who are disproportionately involved in the juvenile justice system (Mooradian, 2003).

Constructing a brief profile of adolescent delinquents establishes a necessary context for discussing delinquency prevention. This may seem like backwards reasoning; taking delinquent youth, noting what they have in common, and then using that information to retroactively create a rubric for identifying delinquent youth. While this may be true, the profile of similarities among delinquent youth provides some insight into delinquent youth. Characteristics of youth participating in delinquency are given by age, gender, race, type of offense, and psychosocial history. In particular, the 14 to 18 age
range is a critical time when youth engage in juvenile violence, substance use, unprotected sex leading to teen pregnancy, and dropping out of school (ASK, 2007; Guttmacher, 2006; Snyder & Sickmund, 2006). There are also gender patterns in delinquent outcomes. Males generally have higher violent crime, homicide, and illicit substance use rates than females (ASK, 2007; Snyder & Sickmund, 2006). Race also plays an important role in profiling delinquency, since minorities, especially Black and Hispanic teens, have higher rates of juvenile violence, substance use, teen pregnancy, and school dropout than Whites (ASK, 2007; Guttmacher, 2006; Schwalbe, Fraser, & Day, 2007; Snyder, Dillow, & Hoffman, 2009). These differences in type of delinquency by race also reflect differences in socioeconomic status, with minorities disproportionately living in poverty (Scott, 1999).

Exploring youth’s psychosocial histories shows that family background, violence, mental health disorders, socioeconomic status, and structural inequality, among other things, can push youth onto paths towards delinquency. Youth with incarcerated parents are at higher risks of becoming incarcerated themselves (Thornberry, Freeman-Gallant, Lizotte, Krohn, & Smith, 2003). Exposure to violence increases youth’s risk of delinquency because it can result in, “impaired social relationships and peer aggression” (Scott, 1999, p. 75). This can also lead to posttraumatic stress disorder (Scott, 1999). Large portions of delinquent youth have mental health issues. Youth with attention deficit and hyperactivity disorder and/or conduct disorder have incarceration rates at least five times higher than youth without these diagnoses (Vermerien, 2003).
1.2.1 Adolescent delinquency and religion

There is need for effective delinquency prevention programs to address this social problem. It has been suggested that religiosity may be one force that protects against delinquency, but there have been contradictory findings. The movement to empirically explore the relationship between religiosity and delinquency started with Travis Hirschi and Rodney Stark’s 1969 article. In “Hellfire and Delinquency,” they found that religious participation and belief did not deter delinquency among students in Richmond, California. These findings sparked interest in the relationship between religion and delinquency because they disconfirmed popular theory (Stark, 1996). Traditionally, an inverse association is expected; religious affiliation and involvement should decrease engagement in delinquent activities, but this is not what was found (Hirschi & Stark, 1969).

Scholars sought to replicate Hirschi and Stark’s findings, resulting in a small body of empirical studies on this topic. This resulted in studies published in succession reaching contradictory findings about religion. For example Hirschi and Stark (1969) disconfirm a relationship between religiosity and delinquency, Higgins and Albrecht (1977) find a significant relationship, Cochran, Wood, and Arneklev (1994) write that the relationship is spurious, Benda (1995) declares that the relationship is significant. These studies use different populations, geographic regions, and methods and this has been seen as the source of dissimilar conclusions about the nature of the relationship between religion and delinquency (Bair & Wright, 2001; Butts, Stefano, Fricchione, & Salamon, 2003; Johnson, Li, Larson, & MCullough, 2000). Currently, there is a tentative emerging consensus that religiosity has a modest to moderate inverse association with delinquency,
although there is still much that is unknown about this relationship (Baier & Wright, 2001; Benda, 1995; Butts, Stefano, Fricchione, & Salamon, 2003; Johnson, De Li, Larson, & McCullough, 2000; Johnson, Jang, Larson, & De Li, 2001; Johnson, Larson, De Li, & Jang, 2000; Mason & Windle, 2002; Regnerus, 2006).

There has also been a lack of consensus in terms of theoretical explanations for the relationship between religiosity and delinquency. For example Hirschi and Stark (1969) use social control theory as a basis, Johnson and Morris (2008) employ strain theory, Pearce and Haynie (2004) mention differential association theory, and Schreck, Burek, Clark-Miller (2007) cite routine activities and lifestyle perspective, and some do not state which theory guides their work. This research stream has also generated two theoretical hypotheses about the relationship between religiosity and delinquency. First is the moral communities hypothesis and it states that “religion ought to be understood sociologically as a group property more than an individual one. When viewed this way, the deterrent effect of religion should be evident in places where religiousness is greatest” (Regnerus, 2006, p.267; Stark, 1996). Second is the ascetic hypothesis and it suggests that religiosity has the most impact on those behaviors that are not condemned by larger society, which are referred to as minor or ascetic offenses like smoking and drinking alcohol, as opposed to behaviors are also condemned by larger society, which include serious delinquency like violent crime (Adamczyk & Pitt, 2009; Regnerus, 2006). None of these sociological theories or hypotheses are able to fully account for the relationship between religiosity and delinquency (Aseltine, Gore, & Gordon, 2000; Baron, 2004; Cochran, Wood, & Arneklev, 1994; Greenberg, 1999; Haynie & Osgood, 2005; Mason & Windle, 2002;
Regnerus, 2006; Wallace, Yamaguchi, Bachman, O’Malley, Schulenberg, & Johnston, 2007).

1.3 Summary of limitations of the literature

Three important deficiencies in the literature prevent researchers from fully comprehending the role religion plays in adolescent delinquency, which this study seeks to address. First, even though religion is generally referred to in the literature as a protective factor, there is not enough research to establish the pathways through which religiosity operates on delinquency (Dew, Daniel, Armstrong, Goldston, Triplett, & Koenig; 2008; Johnson, Jang, Larson, & De Li, 2000; Pearce & Haynie, 2004; Regnerus, 2003; Regnerus, 2006; Resnick, Ireland, & Borowsky, 2004; Smith, 2003). Gaining a better grasp of the underlying pathways operating in this relationship will make it clearer under what circumstances the relationship changes and contribute to our understanding of how protective factors function. Most work in the literature dedicated to understanding religiosity comes out of sociological explorations of delinquency and not risk and resilience research. Scholars have proposed, for example, that religion increases bonds to society (in accordance with social control theory) or reduces the impact of stress (relating to strain theory) (Cochran, Wood, Arneklev, 1994; Johnson & Morris, 2008). These theories have yet to completely account for how religiosity influences adolescent delinquency.

Second, current conceptualizations and operationalizations of religiosity present significant limitations for this research area. Most often, conceptual definitions of
religiosity are not given in research articles and the variable is usually operationalized as frequency of religious services attendance and importance of religion (Johnson, De Li, Larson, & McCullough, 2001; Regnerus, 2006; Smith, Denton, Faris, & Regnerus, 2002). The risk and resilience field must address this limitation in order to further understanding about the relationship between religiosity and delinquency.

Third, there has been a tendency for studies to operationalize the dependent variable, delinquency, as underage drinking and illicit drug use. This is especially true regarding analysis of the Monitoring the Future data set (Wallace et al., 2007). While this data set includes substance outcomes, it also captures other types of delinquency in the form of violent behavior, theft, and property offenses. Considering only the substance outcomes as delinquency is a limitation because other forms of delinquency are also important concerns, such as contact with juvenile justice system, violent behavior, or truancy.

### 1.4 Contribution of this study

This study seeks to address these limitations in the literature. First, this study contributes to the field by using the risk and resilience framework instead of sociological theories to test a mediation hypothesis, which works towards the goal of uncovering more specifics about the relationship between religion and delinquency. Research in the risk and resilience framework identifies risk factors, protective factors, and investigates how they interact to produce certain outcomes (Anthony, Alter, & Jensen, 2009). Second, this study will take steps towards addressing the need for more developed conceptual and operationalizations of religiosity by explicitly providing a conceptual definition of
religiosity and by including any additional measures of religiosity in the data set. Furthermore, religion does not exist in a vacuum; it impacts and is impacted by risk and protective factors, such as family functioning, peers, school, community environment, mental health, etc. (Farrington & Welsh, 2007). Religiosity is only one potential protective factor, but it interacts with other risk and protective factors (Wright & Masten, 2005). The analyses will include empirically identified risk and protective factors into the mediation model as well. This will also provide information on how and if certain risk and protective factors significantly impact delinquency. Third, this study measures more types of illegal behavior aside from illegal substance use and this will increase knowledge about how religiosity impacts a wide range of delinquent outcomes.

### 1.5 Importance of the study

The overall goal of this study is to produce knowledge that will contribute to delinquency prevention efforts. Traditionally, there have been two responses from the government to adolescent delinquency, control and prevention. Hawkins and Weis (1985) describe control as “a reaction to an infraction after it has been committed” and prevention as “an action taken to preclude illegal behavior before it occurs” (p.74). After the Juvenile Justice and Delinquency Prevention Act of 1974, the juvenile court took responsibility for controlling crime and prevention duties (Hawkins & Weis, 1985). Recent trends in juvenile justice legislation and public opinion show a return to the “child saving” perspective (at risk youth can be “saved”), resulting in a political and social
environment more supportive of rehabilitation and prevention (Mears, Roman, Wolff, & Buck 2007; Scott & Steinberg, 2008).

The social science perspective is that prevention is the most successful solution to delinquency. This perspective is not suggesting that efforts to control crime should cease, but rather views prevention as an effective way to end delinquency. Tremblay (2006) writes, “if we catch adolescents before they ‘become violent’ during adolescence, we will be successful in preventing them from becoming violent” (p.485). In fact, Farrington and Welsh (2007) state that preventing delinquency “is better than cure” (p.3). What prevention requires is identifying risk and protective factors impacting delinquency and creating interventions that address them (Farrington & Welsh, 2007). The importance of this dissertation lies in its goal of contributing to the knowledge base in order to create delinquency prevention initiatives that are empirically supported and effective.

There are a wide range of prevention programs, such as early childhood interventions, family based interventions, school based interventions, community based, and faith based interventions (Farrington and Welsh, 2007). These intervention methods represent thousands of delinquency programs throughout the country. However, there are gaps in understanding of how to best prevent delinquency, including discovering what specific components of programs make them effective and how programs transfer to different cultural groups (Farrington & Welsh, 2007; Hogue, Liddle, Singer, & Leckrone, 2005; Webster-Stratton & Taylor, 2001). Then there are weaknesses that need to be overcome related to implementation fidelity and poor methodological rigor (increasing effect sizes, using longitudinal designs, etc.) of studies evaluating interventions (Botvin,
Griffin, & Nichols, 2006; Farrington & Welsh, 2007; Gottfredson, Wilson, & Najaka, 2002; Payne, Gottfredson, & Gottfredson, 2006; Wandersman & Florin, 2003; Welsh & Hoshi, 2002). Undoubtedly, needing replication of successful prevention programs, creating stronger research designs, using more advance statistical models, and identifying successful components of programs are areas where future researchers can invest.

However, it seems that a greater future research need is obtaining richer knowledge of how risk and protective factors of adolescent delinquency operate. In expending research effort to solidify understanding of how various factors in adolescents’ lives increase or decrease their risk of delinquency, some of the unknown questions and research flaws will be accounted for. This dissertation is important because it aims to address some of the fundamental questions about how delinquency and risk and protective factors operate that will help create a stronger knowledge base from which delinquency prevention programs can build upon.

This dissertation will perform these analyses while taking the developmental stage of adolescence into account. Among the many forces impacting adolescents, two in particular are highlighted in the literature. The first is the growing importance of peer relationships. Peers overtly and covertly significantly impact adolescents’ thoughts and behavior (Scott & Steinberg, 2008). There is a strong link between peer behavior and adolescent’s delinquency (Amour & Haynie, 2007; Haynie, 2001; Haynie, 2002; Haynie, 2003; Haynie, Giordano, Manning, Longmore, 2005; Haynie & Osgood, 2005; Lonorado, Giordano, Longmore, & Manning, 2009; Salzinger, Rosario, & Feldman, 2007; Schreck, Burek, & Clark-Miller, 2007). The second is self esteem. Self esteem consists of the
thoughts and emotions individuals have about themselves developed through the feedback others give, reflecting on individuals’ own behavior, and observations of others (Bachman, O’Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2010; Impett, Schooler, Sorsoli, Hensen, and Tolman, 2008; Judge, 2009; Swann, Chang-Schneider, and McClarty, 2007). Similar to peer influence, self esteem has been shown to influence mental health and delinquency outcomes for youth (Impett, Schooler, Sorsoli, Hensen, and Tolman, 2008; Orth, Robins, & Robert, 2008; Plunkett, Henry, Robinson, Behnke, & Falcon, 2007). This study will incorporate peer associations and self esteem into analyses as potential mediators of the relationship between religiosity and delinquency.

1.6 Monitoring the Future (MTF) data set

Commonly, researchers have examined the relationship between religiosity and delinquency by using secondary data sets, such as Monitoring the Future (MTF), National Longitudinal Survey of Adolescent Health (Add Health), National Youth Survey (NYS) and Survey of Parents and Youth (Johnson, Jang, Larson, De Li, 2001; Schreck, Burek, & Clark-Miller, 2007; Smith, 2003; Smith, Denton, Faris, & Regnerus 2002; Wallace et al. 2007; Youniss, McLellan, & Yates, 1999). There are several advantages to using MTF. First, MTF provides more recent and consequently relevant data. This dissertation is using data collected in 2008. Second, MTF data covers many content areas related to adolescent thought and opinions in addition to adolescent behaviors. The variety of content areas measured results in the ability to identify risk and protective factors for analysis. Third, MTF contains more than just illicit substance use as measures of
adolescent delinquency. There are measures of adolescents’ perceptions of peers using substances, adolescents’ participation in violent or criminal acts, and information about peers’ delinquent behavior.

1.7 Research objectives

In general, the objective of this research project is to test a mediation relationship between religiosity and delinquency. The following specific research questions will be addressed:

1. What is the relationship between religiosity and delinquency?
2. What is the relationship between the other identified risk and protective factors and delinquency?
3. Does association with substance using peers mediate the relationship between religiosity and delinquency?
4. Does self esteem mediate the relationship between religiosity and delinquency?
5. Are there differences in delinquency outcomes using the mediating model for males and females?
6. Are there differences in delinquency outcomes using the mediating model for African Americans, Whites, and Hispanics?

Based on the literature cited above, it is hypothesized that there will be a statistically significant inverse relationship between religiosity and delinquency. It is also hypothesized that risk and protective factors will have significant impact on delinquency. The direction of this relationship differs for each factor and depends on what the
literature reports. Finally, it is hypothesized that association with delinquent peers and self esteem are mediators and that there will be differences in delinquency outcomes based on this model by gender and race.
Chapter 2: Literature review

2.1 Purpose of study

The purpose of this study is to examine the impact of risk and protective factors found in the Monitoring the Future data set on adolescent delinquency using the risk and resilience framework. The risk and protective factors chosen for study have been identified in the risk and resilience literature as significant variables influencing delinquent outcomes. This study also seeks to explore the mechanism through which religiosity impacts delinquency. The relationship between religiosity and delinquency has been explored heavily in the sociological field, but not from a risk and resilience perspective. Furthermore, the mechanisms that operate on religiosity to influence delinquency have not been conclusively identified in any field. Two proposed mediators will be analyzed in this study, association with substance using peers and self esteem. Gaining further insight into not just whether risk and protective factors impact delinquency, but also how they do so is valuable knowledge and contributes to creating and testing delinquency prevention initiatives. This chapter provides background information from the literature for the current research project.
2.2 Overview of adolescence

Adolescence is one of the most transformative stages in the life cycle. During this time, adolescents’ identity and sense of morality begins to form and solidify (Kroger, 2007). Cognitively, adolescents grow in their ability to reason, reflect, and think hypothetically, introspectively and abstractly (Laursen & Collins, 2009). Adolescence is also the phase of the greatest physical changes besides infancy (Austrian, 2002). Puberty occurs during adolescence and questions of sexuality and sexual behavior arise (Laursen & Collins, 2009). Adolescents face social issues as they more strongly identify with peers than with family. Feelings of being included or excluded from social groups impact self esteem and behavior choices (Pederson, Vitaro, Barker, & Borge, 2007). Adolescence also has great cultural significance in many societies, as adolescents are given a new identity (Austrian, 2002). The combination and depth of these changes makes adolescence a pivotal time during human development.

Adolescents face many risk factors that threaten their ability to transition into adulthood. Such factors include systemic poverty, community violence, peer pressure, and family disruption (Green, Gesten, Greenwald, & Salcedo, 2008). These factors can lead to behaviors or decisions resulting in arrests, dropping out of school, teenage pregnancy, and incarceration (Green et al., 2008; La NXTót, Cernkovich, & Giordano, 2007). Attention has been paid to investigating root causes of adolescent delinquency and possible intervention strategies. Intervention techniques include school based programs, early childhood intervention, family based programs, and community programs (Aisenberg & Herrenkohl, 2008; Botvin, Griffin, & Nichols, 2006; Connell, Dishion, Yasui, & Kavanagh, 2007; Dryfoos, 1990). As the field of delinquency prevention
continues making strides in determining what is effective to reduce delinquency, more information about protective factors will be useful.

2.2.1 Definition of adolescence

As previously mentioned, adolescence is a critical stage of the life cycle. It is important to be aware of developmentally appropriate tasks for adolescents and how these tasks may intersect with religious thought and behaviors. Although it has been tried, it is difficult to create consensus for age boundaries for the adolescence stage because even though the onset of puberty typically marks the beginning of adolescence, culture can obscure or mask this (Hanawalt, 2008). A simplistic age gradient of adolescence is as follows: early adolescence is ages 12 to 14, middle adolescence is 14 to 16, and late adolescence is 16 to 19 (Austrian, 2002). In adolescence, tasks generally refer to gaining independence or autonomy from parents/authority figures, increasing cognitive abilities, developing identity, attempting to make meaning out of the world, increasing future orientation and planning, and choosing career paths (Blakemore & Choudhury, 2006; Köse, 1996; Markstorm, 1999; Marcia, 1987; Nurmi, 1991). In fact, Erikson viewed adolescence as the life cycle stage of “growing occupational and ideological commitment” (Köse, 1996, p. 258) as well as the “stage of identity” (Schlegel, 2008, p.37).
2.2.2 Changes occurring during adolescence

Adolescence is a time of cognitive change. One primary task listed above is the development and expansion of cognitive abilities (Blakemore & Choudhury, 2006). According to a Piagetian view of human development, adolescents arrive at formal operations instead of engaging in concrete operations, which they did as children (Steinberg, 1993). Through obtaining formal operations, adolescents begin to problem solve and think hypothetically, introspectively, abstractly, and conceptually (Austrian, 2002; Nurmi, 1991; Steinberg, 1993). There are two aspects to thinking conceptually; first is arriving at metacognition and second is decreasing egoism (Nurmi, 1991; Steinberg, 1993). Part of the reason adolescents are able to engage in advanced cognitive processing is the increase in their memory, ability to pay attention, and organization (Steinberg, 1993, p.87). Also developing is the adolescent’s ability to control impulsivity (Steinberg, 2008). It is important to note that adolescents are often not as risk averse as adults and are less likely to identify situations as risky (Scott & Steinberg, 2008).

Adolescence is also a period of intense biological changes. Puberty encompasses a variety of physical changes, including development of capacity for sexual reproduction, rearrangement of body fat and muscle, growth of height and weight, and changes in respiratory and circulatory systems (Dahl, 2008; Steinberg, 1993). These changes happen at different ages for youth, although females typically experience puberty earlier than males (Dahl, 2008; Steinberg, 1993). The literature suggests that the physical and social environment impacts the timing youth experience puberty and the social meaning biological changes are given (Steinberg, 1993).
Furthermore, there are great social changes that accompany adolescence (Becker-Stall, Fremmer-Bombik, Worther, Zimmermann, & Grossmann, 2008). The view of adolescence as a time of transitioning into adulthood developed in the nineteenth century (Steinberg, 1993). Before that, individuals were seen as either children or adults (Kroger, 2006; Steinberg, 1993). The primary vehicle for changing this was industrialization, because it reduced labor demands on youth and enabled them to complete school, for example (Kroger, 2006). As adolescents attempt to achieve developmental tasks, their transition into adulthood is accompanied by various laws giving adult privileges to adolescents, such as driving, marrying, voting, and enlisting in the army (Austrian, 2002). It is also somewhat socially accepted that the developmental stage of adolescence consists of poor decision making and even risky behavior, because adolescents are lacking in maturity and are sensitive to influence from peers (Gardner & Steinberg, 2005). There are also cultural and social meanings given to adolescence, which is often seen as a rite of passage (Steinberg, 1993).

Additionally, there are changes in the context of adolescents’ environment. Although the family continues to be influential on adolescents’ development, the influence of peers and the school environment increase during this stage (Nurmi, 1991; Tarrant, Mackenzie, & Hewitt, 2006). These different spheres teach adolescents “normative expectations concerning life-span development, related role models, and behavioral standards” (Nurmi, 1991, p. 30). However, these “normative expectations” are conditioned by differences in income, culture, and the social and political environment (Nurmi, 1991).
Lastly, adolescence is marked by key psychological changes. Identity development is a vital part of the life cycle and occurs in stages (Kroger, 2006). Adolescence is one of the important points along the journey of identity development and it refers to the “theory one has about oneself (not necessarily wholly conscious)” (Marcia, 1987, p. 165; Kroger, 2006). The literature states that late adolescence is when the “first full identity configuration” (Marcia, 1987, p.165) occurs and this process continues after adolescence, although it does so at decreased speed. This first identity configuration is the culmination of experiences, values, and the environment that the youth was exposed to in childhood and early adolescence (Marcia, 1987).

Another psychological change is autonomy. Like identity, autonomy occurs at various stages among the life cycle, but has a unique role in adolescence (Helwig, 2006). There are different types of autonomy that take place in adolescence, such as emotional, behavioral, and value (Steinberg, 1993). Emotional autonomy refers to having “emotional independence in relationships with others” (Steinberg, 1993, p. 313), but that does not mean that adolescents completely separate from others (Baumrind, 2005; Helwig, 2006). Behavioral autonomy refers to making decisions independently of others and this increases from early to late adolescence, as influence of peers decrease (Helwig, 2006; Steinberg, 1993). Value autonomy refers to developing moral, belief, and religious systems independent of others (Steinberg, 1993). Behavioral and value autonomy also involves receiving and evaluating input from others in order to reach an independent conclusion (Baumrind, 2005; Steinberg, 1993).
2.2.3 Importance of peers

The above sections highlighted how adolescence is a transformative stage in the life cycle. Any efforts to measure adolescent thought or behavior should take into consideration the significant developmental changes occurring. One of these developmental changes is the growing importance of peer relationships. Peers have a significant impact on adolescents’ thoughts and behaviors (Scott & Steinberg, 2008; Steinberg, 2009). Peer influence starts to decrease as adolescents approach adulthood and “individuals begin to form an independent sense of self and develop greater capacity for autonomous decision making” (Steinberg, 2009, p. 56). Peers influence adolescent decision making indirectly and directly (Scott & Steinberg, 2008; Steinberg, 2008). Peers may directly pressure adolescents to engage in a particular behavior. At the same time, adolescents may also act in ways to gain peers’ acceptance even when peers are not directly pressuring adolescents (Steinberg, 2009). While there is no theory that explains adolescent peer relationships, four aspects are usually given attention and they are whether the adolescent has friends, the quality of friendships, the behavior of the friends, and the adolescent’s status in the friend group (Ennett, Faris, Hipp, Foshee, Bauman, Hussong, & Cai, 2008).

The link between peers and delinquency has been discussed. If adolescents have peers in their friendship network who engage in delinquency, they are more likely to be delinquent; this relationship is direct and significant (Amour & Haynie, 2007; Church, Warton, & Taylor, 2009; Haynie, 2001; Haynie, 2002; Haynie, 2003; Haynie, Giordano, Manning, Longmore, 2005; Haynie & Osgood, 2005; Lonorado, Giordano, Longmore, & Manning, 2009; Salzinger, Rosario, & Feldman, 2007, Schreck, Burek, & Clark-Miller,
2007). In fact, certain types of delinquency, such as violent acts, occur more often in
groups of peers, highlighting the influence that peers’ decision to be delinquent can have
on adolescents (Pederson, Vitaro, Barker, & Borge, 2007; Salzinger et al., 2007; Scott &
Steinberg, 2008; Steinberg, 2008). Participation in such behavior may result in
adolescents becoming more accepted by their peer group (Steinberg, 2009). Pederson,
Vitaro, Barker, and Borge (2007) also note that a lack of peer acceptance can lead to
internalizing and externalizing behaviors.

However, the question arises about whether delinquent adolescents choose to
socialize with delinquent peers because they are already engaging in delinquency or that
they interact with delinquent peers and then become delinquent (Gifford-Smith, Dodge,
Dishion, & McCord, 2005; Lonorado, Giordano, Longmore, & Manning, 2009;
Matsueda, 1992). Research has found that both scenarios occur and reinforce engagement
in delinquency (Gifford-Smith et al., 2005; Matsueda, 1992). The influence that
delinquent peers have on adolescents is different depending on the adolescents’ age,
gender, the context, such as gang activity, in which the interactions occur, when the
adolescent becomes delinquent, and what phase of delinquency the adolescent is in
(Gifford-Smith et al., 2005).

2.2.4 Importance of self esteem

Another developmental task adolescents perform is identity formation and
wrestling with issues of self esteem. Conceptually, self esteem consists of the thoughts
and emotions individuals have about themselves developed through the feedback others
give, reflecting on individuals’ own behavior, and observations of others (Bachman, O’Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2010; Impett, Schooler, Sorsoli, Hensen, and Tolman, 2008; Judge, 2009; Swann, Chang-Schneider, and McClarty, 2007).


Studies by Orth, Robins, and Roberts (2008) and Orth, Robins, Trzesniewski, Maes, and Schmitt (2009) conclude that low self esteem is a risk factor for depression across the life cycle. The relationship between self esteem and internalizing behaviors is also influenced by those around adolescents. Plunkett, Henry, Robinson, Behnke, and Falcon (2007) found that self esteem mediated the relationship between perceived parental support and symptoms of depression; “On an ongoing basis, adolescents see significant others (e.g., parents) respond to their actions, interpret their reactions, and internalize the responses of others to the self” (p.769). Depression in adolescents can lead to suicide, suicide attempts, lowered school performance, other mental health disorders, and externalizing behaviors, such as substance use (Plunkett, Henry, Robinson, Behnke, & Falcon, 2007).
The psychological literature has also questioned whether there is a link between “low self esteem and externalizing behaviors” (Donnellan et al., 2005, p. 326). Though disputed, Trzesniewski et al. (2006) argue that there is reason to believe that, “self-esteem may be related to future outcomes of social and personal significance” (p.382). Donnellan et al. (2005) hypothesize that disagreement in the field over this issue is attributed to different methodological approaches. In their investigation of low self esteem and aggression, delinquency, and antisocial behavior, Donnellan et al. (2005) found evidence of a positive relationship. Trzesniewski et al. (2006) tested this relationship between self esteem and future outcomes in an empirical study of a representative birth cohort and concluded that adolescents with low self esteem had more negative outcomes, including likelihood of committing a crime, than adolescents with high self esteem. At the same time, the reported effect sizes for the study are small and so the authors caution that future research in this area is still needed (Trzesniewski et al., 2006).

2.3 Role of religion in adolescence

2.3.1 Definition of religion

In addition to the importance of peers and self esteem, exploring religiosity is necessary and is a significant part of understanding adolescence. This section lays a framework for this by discussing definitions of religion. There is a definition of religiosity in the literature: “extent to which an individual is committed to the religion he or she professes and its teachings, such that the individual’s attitudes and behaviors reflect this commitment” (Johnson, Jang, Larson, & De Li, 2001, p.25). But, there are
few definitions of religion in the sociological or risk and resilience literature. Often, religion is defined as “an organized system of beliefs, rituals, practices, and community, oriented toward the sacred” (Dew et al., 2008, p.382; Barrett, 2000). Generally, it is recognized that religion encompasses an internal aspect, measured by asking how important religion is to respondents, and an external component, measured by asking how often respondents attend services (Wiley, 2006). While there is no overall theory of religion or consensus about how to explain it, a review of the sociological, psychological, and anthropological literature reveals more detailed and nuanced understanding of religion than the definition presented above (Guthrie, 1996; Sosis & Alcorta, 2003). It is important to qualify this discussion with the observation that how religion is defined and experienced is influenced by gender, socioeconomic status, life events, social and political environment, and family background. (Barrett, 2000; Sherkat & Ellison, 1999).

In the sociological literature, most often religion is referred to as an agent of social control. Although the notion of defining religion as a way of achieving conformity was originally championed by Durkheim in his research on religion and suicide, the sociological literature on religion and delinquency has rarely departed from this definition of religion (Giordano et al., 2008; Pearce & Haynie, 2004; Wallace et al., 2007). The few exceptions to this can be seen in scholars viewing religion as a means of decreasing strain (in conjunction with strain theory) or increasing positive relationships with non delinquent peers (in conjunction with differential association theory) (Giordano et al., 2008; Johnson & Morris, 2008).

Psychologists and anthropologists have also interpreted religion as a way of making meaning of the world (Guthrie, 1996; Spilka, Shaver, & Kirkpatrick, 1985). This view of
religion is rooted in general attribution theory, which assumes that “people seek to make sense of their experiences and events by attributing them to causes—i.e., by ‘making causal attributions.’” (Spilka, Shaver, & Kirkpatrick, 1985, p.2). Religion provides answers and explanations for experiences and events and is therefore, “a major source of meaning” (Spilka, Shaver, & Kirkpatrick, 1985, p.7). In addition to this, Shortz and Worthington (1994) describe religion as a coping mechanism. Religion could be providing adolescents with a way to make meaning of and cope with their environment.

Other scholars highlight the social functions of religion. King and Furrow (2004) use social capital theory to hypothesize how religion impacts moral outcomes for adolescents. Social capital is the “actual and potential resources that an individual has access to through a durable network or more or less institutionalized relationships of mutual acquaintance of recognition” (King & Furrow, 2004, p.705). Therefore, religion functions as social capital, providing adolescents with social resources to experience positive outcomes (King & Furrow, 2004).

Lastly, some in the literature defines religion in cultural terms. Sosis and Alcorta (2003) refer to religion as belief in the supernatural and as a cultural set of rituals. They also recognize the emotional component of religion and that it is the emotional meaning attributed to religious concepts that deem them sacred (Sosis & Alcorta, 2003). Religious expression is comprised of rituals, which are methods of communicating (Sosis & Bressler, 2003). Repeatedly performing these rituals increase intragroup cooperation and cohesion (Guthrie, 1996; Sosis & Bressler, 2003).
2.3.2 Relevance of adolescent religiosity to social work

Investigating religiosity as it relates to adolescent delinquency has particular appeal for the social work profession regarding its obligation to assist and protect vulnerable populations, such as at risk youth. Statistics reveal the devastating impact crime, violence, and substance use has had on urban low income minority communities. In the late 1990s it was estimated that, “one in seven African-American males would be confined prior to his 18th birthday” (Mooradian, 2003, p. 8). This trend has continued. Adolescent Black males are two times as likely to be killed and 27 times more likely to be confined than young White males (Boulard, 2005). The statistics are similar for Latino males; 7.7% of Latino males, as opposed to 2.6% of White males, have been incarcerated (Boulard, 2005). A Bureau of Justice Statistics special report on juvenile offenders from 1993 to 2003 indicates that the violent crime rate between 2001 and 2003 for adolescents ages 15 to 17 was double that for adults (Baum, 2005). Focusing social work efforts on preventing adolescent delinquency is essential.

At the same time it is vital to recognize the impact that religion has on the population of minority and low income youth. Statistics show that Black adolescents attend religious services more often and rate religion as more important than any other racial group (Taylor, Chatters, Jayakody, & Levin, 1996). Furthermore, the church has historical, political, and social significance in Black communities, especially in low income areas, because while individuals may not have access to other social services, they have access to the church (Peterson, Atwood, & Yates, 2002). Researching how to utilize the resources of religion in order to prevent adolescent delinquency is necessary and is already being done in some communities. Black churches often have programs targeting
low income adolescents in the form of sports, counseling, and skills building (Rubin, Billingsley, & Caldwell, 1994). Combining the initiatives of churches with the knowledge about the relationship between religiosity and delinquency gained from academia may enhance prevention work.

### 2.3.3 Impact of religion on adolescents

It is noteworthy that religion is a real part of adolescents’ lives. Though often overlooked in research, adolescents do have religious and spiritual lives (Smith, Denton, Fari, & Regnerus, 2002). A review of the Monitoring the Future 1996, National Longitudinal Survey of Adolescent Health 1995, and Survey of Parents and Youth 1998 data sets revealed that nearly half of the adolescents surveyed participate in religious services and declare some type of religious affiliation (Smith, Denton, Fari, & Regnerus, 2002). There has been a decrease in adolescents subscribing to Christianity since the 1970s and in general religious affiliation and participation decreases as adolescents increase in age (Smith, Denton, Fari, & Regnerus, 2002). Demographic differences in religiosity among adolescents were found: females and minorities participate in religion more than males and non-minorities and religious participation varied by geographic region, with increased participation in the south and decreased participation in the northeast (Smith, Denton, Fari, & Regnerus, 2002).

Despite a lack of consensus about definitions of religion, the literature has been able to identify several ways religion impacts individuals’ functioning. This can be discussed
related to individuals’ physical and mental health, attitudes towards crime and deviance, civic participation, and attitudes towards education.

Regarding physical and mental health, the literature states that religion is generally correlated with positive physical and mental health outcomes. For physical health, religious involvement promotes having a well balanced diet, exercising, and wearing seatbelts (Smith, 2003; Rew & Wong, 2006). Adolescents who are religious do not engage in behaviors that will negatively impact their health as often as nonreligious adolescents (Sinha, Caan, & Gelles, 2007; Smith, 2003). The literature indicates that religious involvement is inversely associated with adolescent suicide and suicide attempts (Carleton, Esparza, Thaxter, & Grant, 2008; Dew et al., 2008; Smith, 2003; Regnerus, 2003; Rew & Wong, 2006; Smith, 2003).

Specifically regarding adolescent mental health, religion is modestly associated with more life satisfaction, healthier coping with stress, higher wellbeing, and higher self esteem than nonreligious adolescents (Carleton, Esparza, Thaxter, & Grant, 2008; Markstrom, 1999; Muller & Ellison, 2001; Regnerus, 2003; Smith, 2003). Dew et al. (2008) in a review of 115 studies about adolescent pathology and religion found that 92% of the articles reported at least one negative correlation between religion and pathology. Although the report had varied conceptualizations and operationalizations of religion, there is tentative support for an inverse relationship between religion and pathology (Dew et al., 2008). A systematic review by Rew and Wong (2006) on the relationship between adolescent health and religiosity and spirituality revealed similar results. Tolman, Impett, Tracy, and Michael (2006) found a positive correlation between self esteem and
Religiosity for adolescent females. Markstrom (1999) reported that school self esteem was higher for adolescents with more religiosity.

Religiosity influences the social or relational aspects of adolescents’ lives. Scholars put forth that religiosity provides adolescents with “relatively dense networks of relational ties…involving people who pay attention to the lives of youth, and who can provide oversight of and information about youth to their parents and other people well positioned to discourage negative and encourage positive live practices among youth” (Smith, 2003, p.260; King & Furrow, 2004). In an analysis of the National Longitudinal Study of Adolescent Health, Smith (2003) found that increased religiosity was associated with increased interactions between adolescents’ parents and adolescents’ peers, peers’ parents, and adolescents’ teachers.

Religious traditions may have activities just for adolescents, such as youth groups. Although the National Study of Youth and Religion reports a decline in youth group attendance corresponding to increased age in adolescence, these groups may provide adolescents with opportunities to engage in structured and often supervised activities with potentially non-delinquent peers (Denton, Pearce, & Smith, 2008). In fact, “adolescents from religious families [tend] to have peers who [exhibit] high levels of positive behaviors and low levels of negative behavior” (Manlove, Logan, Moore, & Ikramullah, 2008, p.114). Religiosity may “shield youth from delinquent peers” (Desmond, Soper, Purpura, and Smith, 2009, p.67) and may be part of the criteria adolescents use to select friends (Mason & Windle, 2002).

Related to crime, deviance, and civil involvement religion is theorized to produce social compliance and prosocial behavior (Muller & Ellison, 2001). Religious traditions
often teach adolescents that criminal and antisocial behavior is wrong or immoral (Desmond, Soper, Purpura, and Smith, 2009). There is an emerging consensus in the field that religion is inversely related to adolescent delinquency including substance use, smoking, truancy, and other non-drug related crimes (Bahr, Maughan, Marcos, & Li, 1998; Baier & Wright, 2001; Benda, 1995; Butts, Stefano, Fricchione, & Salamon, 2003; Johnson, De Li, Larson, & McCullough, 2000; Johnson, Lang, Larson, & Li, 2001; Johnson, Larson, De Li, & Jang, 2000; Mason & Windle, 2002; Regnerus, 2006; Sinha, Cnaan, & Gelles, 2007). Civic involvement increases with adolescent religiosity. Studies show that political and civic involvement is positively correlated with religious involvement for young adults and that community service is positively related to religious participation for adolescents (Petts, 2009; Smith, 2003; Youniss, McLellan, & Yates, 1999). Youniss, McLellan, and Yates (1999) write that “a strong circumstantial picture emerges indicating a linkage between religion and service. This link holds regardless of whether religion is looked at as personal (i.e. importance of religion in a youth’s life) or a structural (i.e. religious schools phenomenon)” (p. 247). Additionally, they found that religious adolescents are more likely to attribute their civic involvement to religion as opposed to other sources (Youniss, McLellan, & Yates, 1999).

Generally, religious adolescents have more positive views of education. Regnerus (2003) cautions that this relationship is modest at best and is also reciprocal in nature. Additionally, these effects may operate indirectly (through parental religiosity, for example) or directly (Regnerus, 2003). Regarding direct effects, church attendance is positively correlated with positive attitudes towards school for adolescents (Petts, 2009; Smith, 2003). Also, there is some evidence that religious adolescents have positive
academic performance (Muller & Ellison, 2001; Smith, 2003). Regnerus (2003) writes that this could hold regardless of selection biases, which is the idea that adolescents likely to be religious are also those likely to perform well academically.

### 2.3.4 Religious conversion and adolescence

Even though religious conversion can occur at any stage of the life cycle, it has a unique relationship to adolescence, with higher levels of religious conversion occurring during this developmental stage (Köse, 1996; Markstorm, 1999; Ozorak, 1989; Spilka, Hood, & Gorsuch, 1985). The quest to make meaning of the world, address questions about the meaning and purpose of life, etc. that often accompanies religious conversion are key features of adolescence (Köse, 1996). Adolescents, for the first time, are able to think hypothetically and abstractly about concepts often associated with religion, such as wondering if there is a god (Markstorm, 1999). Additionally, questions relating to religion are commonly asked during adolescence, as this is the stage when identity development and autonomy are highlighted (Köse, 1996). Some, such as Chana Ulman (1982) have put forth the argument that religious conversion occurs for individuals who experienced emotional turmoil or some type of distress in childhood and adolescence. Although Ulman’s (1982) assertion was generally accepted, others, such as Köse (1996), assert that “adolescence prepared the ground for conversational change, not because adolescence was especially traumatic, but because it was the period in which they partly or completely rejected the religion of childhood” (p.258). It is helpful to be aware that even though this study attempts to measure adolescent religiosity, adolescents still may be in various stages of developing a religious identity.
The literature is also careful to point out that this time of abstract thinking does not occur in isolation. Adolescents are often influenced by their parents and family regarding religion. Ozorak (1989) writes about parental influence on religious conversion. There is a positive relationship between parental religiosity and adolescent religiosity particularly for early and middle adolescents (Ozorak, 1989). Bahr, Maughan, Marcos, and Li (1998), Pearce and Haynie (2004), and Regnerus (2003) discuss how parental religiosity and relationships with parents have a direct effect on adolescent behavior. For example, when mothers and adolescents have the same religious affiliation, adolescents’ delinquency decreases, but the more adolescents argue with their mothers, their delinquency increases (Pearce & Haynie, 2004).

### 2.4 Theories of adolescent delinquency

The previous sections have given an overview of the developmental stage of adolescence, the importance of peers and self esteem, and also discussed religion and how it relates to adolescents. This provides a context to discuss adolescent delinquency. This section provides rationale for utilizing the risk and resilience framework instead of other predominate sociological theories of delinquency (strain theory, social control theory, and differential association theory), a brief overview of those predominate theories, followed by a more in-depth discussion of the risk and resilience framework.

The proposed research project will adopt a risk and resilience framework of viewing adolescent delinquency. Instead of having a deficits model, which focuses on adolescents who are delinquent and why, this research project will employ a strengths based model,
focusing on the characteristics of adolescents who abstain from delinquency. In the 1970s, scholars realized that some children “survive risky environments with their self-confidence, their coping skills, and their risk-avoidance behavior relatively intact. They have been able to fight off or recover from their misfortune” (Zimmerman & Arunkhumar, 1994, p. 1; Masten, 2007). These children displayed what is being referred to as resilience and scholars intrigued by this devoted attention to not just the “pathology of disadvantage” (Zimmerman & Arunkhumar, 1994, p. 2), but also to how individuals have successfully overcome risk.

Other sociological theories explaining adolescent delinquency will not be used because their theoretical bases generally lack the following elements that are necessary to include to reflect a social work approach to understanding adolescent delinquency. The elements are as follows: having a strengths based approach instead focusing on deficits of adolescents, not having a narrow definition of what causes delinquency (for example, strain theory states it is caused by experiencing stress), focusing on applying the research to delinquency prevention programs or policies, and accounting for the complexity of how environmental factors impact delinquency. The risk and resilience perspective includes these elements as core aspects the research agenda.

2.4.1 Strain theory

Strain theory is one of the dominant sociological explanations given for juvenile delinquency and its basic concepts and principles will be discussed in this section. Strain theory is related to Emile Durkheim’s anomie theory. Durkheim believes that societies
place restrictions on the goals its members attempt to obtain (Passas & Agnew, 1997). When societies are not able to place these restrictions, anomie and delinquency are the results (Passas & Agnew, 1997). Without society regulating goals, individuals are left to pursue indefinite and unachievable goals and an inability to attain them results in anger, frustration, and disappointment (Passas & Agnew, 1997).

In 1938, Robert Merton expanded Durkheim’s theory (Passas & Agnew, 1997). Merton states that society encourages everyone to pursue economic success and middle class socioeconomic status (Agnew, 1998). In the 1970s, Merton and other scholars who developed classic strain theory faced criticism because of a lack of empirical evidence showing that rates of delinquency are highest when desires for economic gain are strongest and the expectations for achieving it are lowest (Agnew, 1985; 1998). Furthermore, classic strain theory could not explain why only some and not all adolescents experiencing strain turned to delinquency (Agnew, 1998; 2010).

Agnew (1998) expanded classical strain theory to form general strain theory. First, he argued that frustration in realizing immediate (not just economic) needs, such as social acceptance, could lead to delinquency. Goals are influenced by a “youth subculture” (Agnew, 1998, p. 180) that encompasses more than the desire for middle class status (Piquero, Fox, Piquero, Capowich, & Mazerolle, 2010; Piquero & Sealock, 2010). Second, Agnew (1985; 2010) adds the principle to strain theory that adolescents are also motivated to avoid frustration associated with what he calls aversive situations. Adolescents have limited ability to avoid aversive situations and therefore resort to illegal means to leave them (Agnew, 1985).
2.4.2 Social control theory

During the 1960s, classical strain theory was the dominant explanation for juvenile delinquency (Greenberg, 1999). In 1969, Travis Hirschi published *Causes of Delinquency*, which diminished classical strain theory’s status and established social control theory as another explanation for juvenile delinquency (Greenberg, 1999). The term social control focuses on individuals’ bonds to society and suggests that when the bond is strained or broken, individuals will deviate (Hirshi, 1969; Welch, Tittle, Yonkoski, Meidinger, & Grasmick, 2007). The question that social control theory answers is not why do crimes take place, but rather why do they not take place. The answer, according to this theoretical perspective, is because of bonds to society (Özbay & Özcan, 2006; Welch, Tittle, Yonkoski, Meidinger, & Grasmick, 2007).

Social control theory assumes that individuals do not naturally conform to society, meaning conformity, not deviance, is what needs to be explained (Özbay & Özcan, 2006; Wiatrowski, Griswold, & Roberts, 1981). Conformity is developed through socialization, which is the process of creating a bond between individuals and society (Wiatrowski, Griswold, & Roberts, 1981). There are four aspects of bonds to society: attachment, commitment, involvement, and belief (Chriss, 2007). The stronger the aspects of the bond to society, the less likely individuals are to deviate (Wiatrowski, Griswold, & Roberts, 1981). In essence, “the social bond acts as a control mechanism and as a brake to inhibit our natural tendencies toward deviant behavior. The social bond is not equally strong for all people.” (Junger & Marshall, 1997, 81)
2.4.3 Differential association theory

A third theory of adolescent delinquency is differential association theory. This theory developed out of the work from Edwin Sutherland. The premise is that society is comprised of diverse groups and crime is the result of tension between these groups (Matsueda, 1982, 1988). In society, individuals hold views that are favorable to the law as well as views that are unfavorable to the law (Matsueda, 1982, 1988; Church, Warton, & Taylor, 2009). Differential association is the “process by which persons experience these conflicting definitions about appropriate behavior” (Matsueda, 1982, p.489). Views of the law are learned through interacting with others (Church, Warton, & Taylor, 2009; Steffinmeiser & Ulmer, 2007). With differential association, delinquent behavior is learned. Sutherland theorizes that sociodemographic characteristics, such as gender, race, socioeconomic status, impact individual deviance only through “affecting the probability of learning behavior patterns favorable and unfavorable to law violation” (Matuseda, 1982, p.490).

Overall, strain theory, social control theory, and differential association theory have labored to explain and predict the phenomenon of adolescent delinquency. Although none of these theories offers a complete explanation or prediction of delinquency, they have increased knowledge about its occurrence and how it can be prevented. Strain theory brings to attention the structural forces that may be influencing adolescents, such as poverty and neighborhood crime, and causing them strain. Social control theory teaches that bonds to family, for example, are important and delinquency preventions
should support the parent/adolescent relationship. Differential association theory cements the role of peers in contributing to adolescent delinquency. Nevertheless, the inability of these theories to account for delinquency suggests the need for an alternative perspective.

The risk and resilience framework will be used a guide for this research. The risk and resilience framework has the following advantages. It is a broad framework that incorporates many of the principles of these theories, such as the importance of bonds, the role of strain, and the importance of peers, but is an empowerment based framework that allows for the interplay between multiple risk and protective factors on micro, mezzo, and macro levels. It also recognizes the multiple systems that impact youth, and its results can directly inform prevention research and policy (Anthony, Alter, & Jensen, 2009).

2.5 Risk and resilience framework

2.5.1 Overview of framework and definition of terms

Research within the risk and resilience framework identifies risk factors, protective factors, and investigates how they interact to produce certain outcomes (Anthony, Alter, & Jensen, 2009; Masten, 2007). Risk factors can be defined as, “events, conditions, or experiences that increase the probability, but do not ensure, that a problem will be formed, maintained, or exacerbated” (Anthony, Alter, & Jensen, 2009, p.46). Protective factors are things that, “moderate the effects of individual vulnerabilities or environmental hazards so that the adaptational trajectory is more positive than would be the case if the protective factor were not operational” (Masten, Best, & Garmezy, 1990, p.426). It is important to know that protective factors are not synonymous with resilience
Resilience is, “the capacity of dynamic systems to withstand or recover from significant disturbances” (Masten, 2007, p.923).

This research framework is still being developed and as a result there are some ambiguities in conceptualization of terms and a lack of a defined research model and methodology (Aisenberg & Herrenkohl, 2008; Anthony, 2008; Carothers, Farris, & Maxwell, 2007; Fraser, Richman, Galinsky, 1999; Rutter, 2000; Waller, 2001). It is important to emphasize that risk and resilience is not a theory, but rather a framework. This framework provides a perspective for viewing adolescent delinquency and scholars create theoretical and empirical models for understanding and preventing delinquency (Masten & Powell, 2003; Jensen & Fraser, 2006). The models vary in their specificity, include protective and risk factors, and identify processes of achieving resilience (Masten & Powell, 2003).

2.5.2 Risk defined

Historically, the concept of risk is rooted in epidemiology and refers to medical conditions, “reflecting a concern for adverse outcomes related to morbidity and mortality” (Jessor, 1991, p.597). The shift from focusing on pathology to searching for resilience requires changes in the conceptualization of risk. Risk should no longer be assessed for or referred to solely in terms of biology, but must include the social environment and behaviors (Jessor, 1991). Risk occurs on micro, mezzo, and macro levels, although the macro risk factors (such as poverty) are often mediated through mezzo and micro risk factors (like the family) (Anthony, Alter, & Jensen, 2009;
Smokowski, Mann, Reynolds, & Fraser, 2004). Being aware of adolescent development trajectories also introduces the concept of psychological risk, which focuses on risk relating to “the entire range of personal development and social adaptation in adolescence” (Jessor, 1991, p.598).

### 2.5.3 Resilience defined

Typically, the literature refers to resilience as, “the capacity for successful adaptation to a changing environment” (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003, p.1). Individuals exposed to risk, but who do not develop adverse outcomes experienced resilience. This successful adaptation is referred to as “manifested competence, or success, in achieving the appropriate developmental tasks at different stages of life” (Schoon & Bynner, 2003). Sandler (2001) adds that these tasks also must be culturally appropriate.

The concept of resilience emerged from two sources, psychological work on coping and physiological research on stress (Tusaie & Dyer, 2004). Some scholars have traced resilience back to three theories: social learning theory, cognitive behavioral theory, and health realization theory (Turner, Norman, & Zunz, 1995). Since resilience is entrenched in context on different levels it should be thought of not as, “an attribute that an organism either has or does not have…rather, resilience refers to a pattern of adaptation that may or may not be present from one time to another and from one domain to another” (Riley & Masten, 2005, p.18; Masten & Obradovic, 2008; Masten, 2007). It is important to note that resilience is different from recovery. Individuals in recovery have experienced an
adversity and their symptoms have dissipated whereas resilient individuals are “asymptomatic” (McLaughlin, Doane, Costiuc, & Feeny, 2009, p.355).

2.5.4 Protective factors defined

Recognizing resilience as a process brings further understanding to the concept of protective factors. Protective factors are generally seen as factors that advance successful adaptation or development and decrease the occurrence of negative outcomes (Frey & Walker, 2006). Protective factors can operate on individuals in several ways. These protective factors may exert a positive influence on adolescents regardless of their degree of high risk behavior (Frietas & Downey, 1998). Or, protective factors can have a positive influence on adolescents experiencing a greater involvement in high risk behavior as opposed to those not involved in high risk behavior (Frietas & Downey, 1998). At the same time, protective factors can have a direct or indirect effect on outcomes as opposed to effecting risk factors (Jessor, Turbin, & Costa, 1998).

2.5.5 Relationship to theory

One example of a model derived from the risk and resilience framework is the social development model developed by Richard Catalano, J. David Hawkins, and colleagues at the University of Washington (Hawkins, Smith, Hill, Kosterman, & Abbott, 2007; Jensen & Fraser, 2006). The social development model was chosen to mention because it displays how multiple theories can be incorporated within the risk and resilience framework. This model attempts to explain how identified risk and protective factors

Social control theory asserts that adolescents are socialized through various bonds to society (attachment, commitment, and belief) (Hawkins & Weis, 1985). Based on this, the social development model posits that interventions should work to enhance adolescents’ bonds to societal norms. Social learning theory implies that positive reinforcement leads individuals to learn a certain behavior and punishment causes individuals to abandon it (Hawkins & Weis, 1985). Therefore, the model acknowledges how socialization from the environment and adolescents’ peers can encourage adolescents to engage in delinquency (Hawkins & Weis, 1985). Differential association theory provides an understanding of, “parallel but separate causal paths for prosocial and antisocial processes” (Catalano & Hawkins, 1996, p.155; Hawkins, Smith, Hill, Kosterman, & Abbott, 2007). The model recognizes that individuals who bond to those possessing antisocial beliefs will accept and behave in accordance with those beliefs (Catalano & Hawkins, 1996; Hawkins, Smith, Hill, Kosterman, & Abbott, 2007).

The literature states that the risk and resilience perspective is also grounded in public health and developmental psychopathology (Jensen & Fraser, 2006; Sameroff & Seifer, 1990). The framework’s focus on discovering factors that increase the probability of negative outcomes emerged from public health’s search for biological risk (Jensen & Fraser, 2006). The social development and other models’ acknowledgement of understanding youth’s behavior at different developmental stages come from
developmental psychology (Catalano & Hawkins, 1996). Developmental psychology assumes that there is a consistent developmental process that can be identified for children (Cicchetti, 1990). These developmental models inherently seek to identify factors in developmental processes that foster competence or resilience (Achenbach, 1990).

2.6 Summary of existing research by topic

2.6.1 Issues related to measuring risk and protective factors in empirical studies

Several scholars in the field have noted the lack of consistent conceptualization of terms. The field struggles to clearly differentiate conceptual definitions of risk and protective factors (Deković, 1999; Fraser, Richman, & Galinsky, 1999; Gewirtz & Edleson, 2007). Rutter (2007) suggests that this debate must, “appreciate that protection from environmental hazards may derive from circumstances that are either neutral or risky in the absence of the environmental hazard” (p.208). Risk and protective variables are not merely factors that exist in a vacuum, but also interact with the environment and each other to produce a heightened effect. Furthermore, different cultural systems greatly impact how factors are experienced and also identified. Paying attention to what concepts in different cultures function as protective factors is important (Aisenberg & Herrenkohl, 2008).

Often scholars describe risk and protective factors as being two ends on a continuum or two sides of a coin (Deković, 1999). Treating them as opposites leads to
complications, because whether a factor is considered to be a risk or protective factor depends on what aspect of the factor researchers focus on (Pollard, Hawkins, Arthur, 1999). In fact, Stouthamber-Loeber, Loeber, Farrington, Zhang, van Kammen, and Maguin (1993) describe how researchers give more attention to the risk side of the coin than protective, which results in less information about protective factors. Furthermore, it is not apparent whether, “opposite ends of the continuum are actually opposites or simply less of one variable” (Zimmerman & Arunkumar, 1994, p.9). Ascribing one variable to measure risk prevents researchers from examining whether that same variable has a protective effect, since a single variable is labeled as either risk or protective (Stouthamber-Loeber et al, 1993).

Related to the idea of a continuum of risk and protective factors, some have highlighted how each variable could be either a risk or protective factor depending on the situation (Zimmerman & Arunkumar, 1994). Stouthamber-Loeber, Loeber, Wei, Farrington, and Wikström (2002) point out that researchers should “consider that a variable can act for one person as a risk and for another person as a promotive factor and for a third be neutral” (p.112). This requires identifying what the continuum of risk to protection looks like for each variable. For example, related to religiosity as a variable, for some adolescents participation in church youth group activities decreases their delinquency by providing prosocial way to spend their time. But, for other adolescents, their families’ religious beliefs may result in behavior expectations that are oppressive and adolescents could express rejection of these by engaging in delinquency. Stouthamer-Loeber et al. (1993) indicate that, similar to this example, most variables have both a risk and protective effect on delinquency as opposed to just displaying a risk or protective
Risk and protective factors may impact outcomes to a different degree and the relationship between them may be nonlinear (Stouthamber-Loeber et al., 2002). While this adds to the discussion, measurement issues also arise in determining at what point along the continuum a variable changes from a risk to a protective factor (Fraser, Richman, & Galinsky, 1999; Zimmerman & Arunkumar, 1994). This dissertation will address this issue by not demarcating certain variables as either a risk or protective factor. Instead, this dissertation will examine different domains of adolescents’ environment and allow for both risk and protective influences to exist. It is important to note that the creation of these domains is somewhat superficial. There is significant overlap between them; certainly family functioning has an impact on mental health and well being, for example. There are reciprocal relationships between these domains. Lastly, this dissertation does not intend to present an exhaustive list of every factor that could possibly influence delinquency. Details of these domains may have previously been mentioned in earlier discussions, but this section aims to clearly identify the risk and protective factors for each domain. This is necessary to provide a context for the methods and analysis chapters. The following domains will be discussed: sociodemographic characteristics, family, school, mental health, physical health, victimization. Religiosity is also an important domain, but it has already been discussed.

2.6.2 Sociodemographic characteristics

The literature has identified certain sociodemographic characteristics that serve as risk and protective factors. Related to gender, being male or female serves as a risk and
protective based on the type of delinquency and larger social and environmental context. For example, females are at greater risk of depression, which can lead to externalizing behaviors, and males are more likely to initiate delinquent behavior and struggle with self control and paying attention (Costello, Swendsen, Rose, & Dierker, 2008; Daigle, Cullen, & Wright, 2007; Fagan, Van Horn, Hawkins, & Arthur, 2007; Williams, Van Dorn, Ayers, Bright, Abbott, & Hawkins, 2007). Minority racial status, especially identifying as African American, is a risk factor for delinquency (Bruchinal, Roberts, Ziesel, & Rowley, 2008; Green, Gesten, Greenwald & Salcedo, 2008; Smith & Krohn, 1995).

Closely related to race and delinquency is socioeconomic status. Poverty is positively and significantly related to delinquency (Bruchinal, Roberts, Ziesel, & Rowley, 2008; Green, Gesten, Greenwald & Salcedo, 2008). In fact, McNulty and Bellair (2003) argue that racial differences in crime rates are just reflections of structural inequality and racial segregation. Protective factors include living in a middle class or upper class neighborhood, having positive relationships with adults in the community, and after school activities for youth (Corcoran & Nicols-Casebolt, 2004).

Taken together, these findings magnify the role of structural inequality and how that impacts adolescents, perhaps more than the other domains of risk and protective factors. Certainly the literature is not suggesting that inherently African Americans are more delinquent than Whites or that individuals living in urban environments are intrinsically more violent. These findings suggest that there are systemic roots that lead certain segments of the population to experience more elements that are destructive than other groups. For example, the fact that African American youth are at high risk for
delinquency is partially because higher proportions of African Americans than Whites live in poverty.

2.6.3 Family

Although many factors contribute to delinquency, “the family is considered the nexus of these intersecting social spheres in the lives of children and adolescence” (Hogue & Liddle, 1999, p.278). High conflict between parent/caregiver and youth, lack of parent/caregiver involvement and attention, and poor parenting skills increase youth’s chances of displaying antisocial behavior (Corcoran & Nicols-Casebolt, 2004). Additionally, parental stress and poor mental health can negatively impact parenting skills and interrupt a normal developmental trajectory for children (Burchinal, Roberts, Zeisel, & Rowley, 2008; Webster-Stratton & Taylor, 2001).

Furthermore, the structure of the family serves as risk or protective factors. Single parent households and having large families are risk factors (because resources have to be shared amongst more individuals), while living in a two parent home is a protective factor (Cleveland, Feinberg, Bontemp, & Greenberg, 2008; Corcoran & Nicols-Casebolt, 2004; Green, Gesten, Greenwald & Salcedo, 2008; Kostelecky, 2005). Additionally, father involvement and support for adolescents is a protective factor by reducing externalizing behavior (Corcoran & Nicols-Casebolt, 2004). There is evidence that father involvement and engagement can reduce delinquent outcomes for low income families (Sarkadi, Kristiansson, Oberklaid, Bremberg, 2008).
These studies suggest that family structure and its stability is important in offering adolescents risk or protection. Additionally, the psychological well being of parents or caregivers also impacts youth. The quality of the family unit’s functioning can guide adolescents, or at least the African American sample of youth, through challenging transitions. Lastly, positive participation in adolescents’ lives from not just mothers, but also fathers is important.

2.6.4 School

Adolescents’ performance in the school environment has been linked with functioning in later adolescence and adulthood. Risk factors related to the school environment are low grades, lack of commitment to school curriculum, and little desire for post secondary education (Henry, 2007). The literature has shown that academic performance, involvement in school activities, and school connectedness are protective factors for delinquency (Corcoran & Nicols-Casebolt, 2004; Green, Gesten, Greenwald & Salcedo, 2008; Fredricks, Blumenfeld, & Paris, 2004; Janosz, Archambault, Morizot, & Pagani, 2008; Whitney, Renner, & Herronkohl, 2010). Feldman and Matjasko (2005) in their literature review particularly highlight the importance of extracurricular activities because they “serve as a place to act out the developmental tasks of adolescence” (p.161).

While all of these factors may be in place, these studies do not take into consideration the impact of school mobility on youth. Gapser, DeLuca, & Estacion (2009) found that of a nationally representative sample of youth, those who had experienced school mobility had higher delinquency rates. While they did not find
evidence of a causal relationship between school mobility and delinquent behavior, Gasper, DeLuca, & Estacion (2009) suggest that school mobility may be part of a larger package of risk factors that impact youth, such living in low income areas and not having a stable family.

It is not surprising that the school environment, where youth spend the majority of their time, has ramifications for potential delinquent outcomes. These studies focused on the developmental stage of adolescence and how core skills that youth need to learn at this stage are partially fostered by the school environment. The fact that other scholars routinely link school performance with later life outcomes indicate that there potentially are skills, such as social, problem solving, and time management, that adolescents acquire and begin to master in a school context. Interruptions in this process result in negative outcomes.

### 2.6.5 Mental health

There are several risk and protective factors related to mental health and well being. Depressive disorders are of particular concern regarding adolescent mental health (Burns & Rapee, 2006). Depression in adolescents is highly correlated with suicide and increased mental health problems in adulthood (Burns & Rapee, 2006). In fact, suicide is the third leading cause of death for adolescents and half of adult mental health disorders begin in adolescence (Belfer, 2008).

Mental health is impacted by the family, community, and school environments and there are differences in mental health outcomes by age, gender, and race (Van
Vorhees, Paunesku, Kuwabara, Basu, Gollan, Hankin, Melkonian, & Reinecke, 2008; Wight, Botticello, & Anshensel, 2006). Poverty and low socioeconomic status are associated with poor mental health outcomes in addition to poorer parental mental health and unstable family structure (Burchinal, Roberts, Zeisel, & Rowley, 2008; Patel, Flisher, Hetrick, & McGorry, 2007; Wight, Botticello, & Anshensel, 2006). Older adolescents, females, and minorities tend to have more mental health issues than younger adolescents, males, and Whites (Wight, Botticello, & Anshensel, 2006).

Having social support from peers, family, and other adults, conflict resolution skills, and positive attachment to family, school, and community are protective factors for mental health disorders (Patel, Flisher, Hetrick, & McGorry, 2007; Wight, Botticello, & Anshensel, 2006). Healthy self esteem is an additional protective factor (Bearinger & Blum, 1997; Corcoran & Nicols-Casebolt, 2004; Gale, Batty, & Deary, 2008; Kliewer & Sandler, 1992; Goggin, Malcarne, Murray, Metcalf, & Wallston, 2007; Steese, Dollette, Phillips, Hossfeld, & Matthews, 2006). Umaña-Taylor and Updegraff (2007) write that “self esteem serves as a protective factor by insulating youth from stress that stems from negative life events, and specifically, protecting against depression” (p.551). Even certain personality types are considered to be protective factors. Having an “easy going” temperament as opposed to an “disagreeable” temperament has been identified as a protective factor (Corcoran & Nicols-Casebolt, 2004). Although abstract, having hope is a protective factor and has been associated with increased school performance (Brown & Jones, 2004).
The mental health functioning of adolescents is fragile. It can be impacted by nearly every aspect of the lives and is very important to maintain. These studies show that, unlike the other domains, the opposite of a risk factor is a protective factor. Poor mental health is a risk factor for youth, while healthy functioning protects youth. This means that while the mental health functioning of youth is fragile, it is also powerful and can serve as a barrier of protection when youth experience harmful aspects of their psychosocial environment.

2.6.6 Physical health

Physical health, which includes healthy food habits, lack of obesity, healthy dieting practices, is also viewed as a protective factor for mental health disorders in addition to developmentally appropriate physical development (Neumark-Sztainer, Story, Resnick, & Blum, 1998; Patel, Flisher, Hetrick, & McGorry, 2007; Van Vorhees, Paunesku, Kuwabara, Basu, Gollan, Hankin, Melkonian, & Reinecke, 2008). In a regression analysis of risk and protective factors for adolescent depression using the National Longitudinal study of Adolescent Health (Add Health), Van Vorhees, Paunesku, Kuwabara, Basu, Gollan, Hankin, Melkonian, and Reinecke (2008) found that getting enough sleep and feeling fit corresponded to “three- and fivefold lower likelihood of developing a depressive episode” (p.608).

At the same time, poor physical health, in terms of lack of physical activity, is correlated with not just risk for depression, but also delinquency, such as substance use (Corcoran-Nicols and Casebolt, 2004; Neumark-Sztainer, Story, Resnick, & Blum,
1998). For example, in their analysis exploring the connection between physical activity, sedentary behavior, and risk behavior using the Add Health data, Nelson and Gordon-Larson (2010) found that adolescents who primarily engaged in watching videos and television had higher rates of substance use, truancy, smoking, and violence than adolescents with higher levels of physical activity.

It may seem unusual to include physical health in a discussion of risk and protective factors. However, there is a connection between physical health, the environment, and outcomes for adolescents. Furthermore, this factor may be a byproduct of the other domains discussed. For example, having good physical health, including healthy eating habits, a lack of obesity, and healthy dieting practices, could suggest that adolescents have caregivers who supervise them.

### 2.6.7 Victimization

Li, Nussbaum, and Richards (2007) write that “study after study identifies exposure to violence and victimization as significant risks that contribute to adverse outcomes” (p.22). Adolescents who have been exposed to violence are at risk for externalizing and internalizing behaviors including delinquency, aggression, low self esteem, anxiety, and depression (Agnew, 2002; Li, Nussbaum, & Richards, 2007; Sullivan, Farrell, & Kliewer, 2006). Physical, sexual, and/or emotional abuse, child maltreatment, and exposure to domestic violence are risk factors for poor school performance (Patel, Flisher, Hetrick, & McGorry, 2007; Whitney, Renner, & Herronkohl, 2010). Violent victimization also includes, for example, being physically assaulted by someone (hit, pushed, etc), being attacked with a weapon, having something stolen by
force, being threatened with a weapon (Kim & Tajima, 2009; Taylor, Peterson, Esbensen, & Feng, 2007). Being the victim of abuse or physical violence suggests that adolescents could be in communities with higher levels of violence or interpersonal relationships that are unhealthy and damaging, which leads to negative outcomes for adolescents (Patel, Flisher, Hetrick, & McGorry, 2007).

Victimization by peers is also a risk factor and includes physical assault by peers or “behaviors that are specifically designed to inflict harm by damaging or manipulating the victim’s relationship with other peers” (Sullivan, Farrell, & Kliwer, 2006, p. 120; Barnes, Mitic, Leadbeater, & Dhami, 2009). This can result in increased alcohol use, smoking, and substance use (Sullivan, Farrell, & Kliwer, 2006). It is particularly relevant and necessary to mention peer victimization given the central role that peers play during adolescence (Sullivan, Farrell, & Kliwer, 2006). The converse of peer victimization is having positive interactions with non delinquent peers and this can serve as a protective factor (Barnes, Mitic, Leadbeater, & Dhami, 2009). These supportive relationships help adolescents further develop social skills, feel accepted, and enable youth to more successfully navigate changes, such as transitioning to middle or high school (Sullivan, Farrell, & Kliwer, 2006).

Unlike any other section discussed, only risk is associated with victimization. Victimization can occur physically, sexually, or emotionally. The literature suggests that experiencing victimization is particularly potent for adolescents and indicates that adolescents are living in toxic environments in terms of destructive relationships with family, peers, or community members. One implication from this research is the need to assist adolescents in handling victimization, because it could be that the delinquent
behavior many youth who have been victimized participate in could be attempts to self medicate.

2.7 Strengths of existing research of risk and protective factors

There are several strengths of the existing research on risk and protective factors, which has greatly contributed to knowledge about how, when, why, and for whom adolescent delinquency is likely to occur. One strength is the relative consistency among findings. This provides a strong empirical foundation for scholars as they seek to identify variables in data sets that could be considered risk or protective factors. A second strength is the breadth of findings. Research has been done in all of the domains listed above, which reflects a dedication to understanding how all aspects of adolescents’ environment influence delinquency. Furthermore, there are individual differences within groups and the risk and resilience framework allows for the uniqueness of individual adolescent’s experiences to be captured. The third strength of the existing literature is that support for the risk and resilience framework can be seen through the empirical findings. The risk and resilience framework’s assertions that risk and protective factors interact with one another can be seen. This lends viability to the assumptions of this framework, making it appropriate to use in research.

2.8 Gap in existing literature: Mechanisms for risk and protective factors

More effort on understanding religiosity’s impact on adolescents related to delinquency is desirable within this framework in addition to uncovering the mechanisms
through which religion is influencing youth. This enhances the risk and resilience framework’s ability to account for variability in delinquency outcomes by increasing knowledge regarding the impact of protective factors. This research project aligns with what has been identified in the literature as the direction risk and resilience research should pursue (Wright & Masten, 2005). Wright and Masten (2005) write that, “there is much work that remains to be done to understand processes (mediating, moderating, promoting, and compensating) well enough to manipulate them most effectively and efficiently to benefit children and society” (p.32). Focusing on religiosity would contribute to the risk and resilience literature. While this dissertation focuses on religiosity due to its importance to adolescence and lack of understanding of the mechanisms through which it operates in the literature, this has relevance for a growing awareness of how protective factors work in general.

Attempts have been made in the literature to explain the mechanism through which religiosity decreases delinquency. This has not yet been explored in depth from a risk and resilience framework. There is a continued need in the literature for further empirical investigations of what the pathway is between religiosity and delinquency from a risk and resilience perspective. Regnerus (2006) summarizes: “Simply put, many of us have documented religious influences, but few have done an adequate job of understanding the pathways of effect, and fewer still articulate why religion matters” (p.278, italics in original). This highlights the significance of this research question; uncovering these pathways is a need in the literature.

In addition to needing to identify the pathways that religiosity impacts delinquency as a sociological research agenda, there is a strong need within the risk and resilience
framework to identify the pathways that risk and protective factors operate through to impact individuals’ experience of resilience. Although Zimmerman and Arunkumar stated this in 1994, more than ten years later the same sentiment can be seen. In 2007, Rutter still called for more research on the pathways behind risk and resilience. The development and maintenance of coping skills and individual agency over time needs to be addressed in explorations of underlying mechanisms (Aisenberg & Herrenkohl, 2008; Rutter, 2007).

There is also a need for the field to more consistently operationalize key variables in addition to using nationally representative data. It is difficult to create a synthesis of information about religiosity when one scholar reaches conclusions simply about service attendance and importance of religion and another reports findings about these in addition to community based religious activities. Questions arise, such as how differences in findings are attributed to the added measure of community based religious activities? Researchers need to clearly describe why and how they conceptually and operationally define religiosity. This will increase the ability for scholars to replicate findings and begin to tell the same story about religiosity. This needs to be done while concurrently working to expand operationalizations of religiosity, because it is more than just service attendance and importance (Benda, 2002).

2.9 Directions of research

Given the strengths and limitations within the literature, this research project will focus on religiosity as protective factor and develop a greater understanding of the
mechanisms through which it operates, due to its relevance to the developmental stage of adolescence and the connection that has been made in the literature between religiosity and adolescent delinquency. The literature also shows that association with peers and self esteem are important features of adolescence. Specifically, associating with delinquent peers and having low self esteem correspond with delinquency. Spending time with non-delinquent peers and higher self esteem are correlated with religiosity. Therefore, this research will examine association with delinquent peers and self esteem as potential mediators between religiosity and delinquency. A subset of delinquent peers, substance using peers, will be used in the analysis because the data set does not ask about non drug use behavior from peers.

This mediation analysis will occur in the context of other risk and protective factors interacting to influence delinquent outcomes. This is done in recognition of the fact that religiosity is neither the only nor the strongest influence on delinquency. The data set will be examined to include risk and protective factors identified in previous empirical research. In the model, these will have a direct influence on delinquency.

A secondary analysis will attempt to be done to address the role of gender and race. The above section on sociodemographic characteristics revealed that there are differences in delinquency outcomes by gender and race. This research makes reference to the importance of these two factors by including them in multiple group analysis. This is also a moderation test and will examine whether the mediation model differs by gender or race.

In summary, the research questions for this dissertation are below.
1. What is the relationship between religiosity and delinquency?

2. What is the relationship between the other identified risk and protective factors and delinquency?

3. Does association with substance using peers mediate the relationship between religiosity and delinquency?

4. Does self esteem mediate the relationship between religiosity and delinquency?

5. Are there differences in delinquency outcomes using the mediating model for males and females?

6. Are there differences in delinquency outcomes using the mediating model for African Americans, Whites, and Hispanics?

   It is hypothesized that there will be a statistically significant inverse relationship between religiosity and delinquency. It is also hypothesized that risk and protective factors will have significant impact on delinquency. The direction of this relationship differs for each factor. Finally, it is hypothesized that association with delinquent peers and self esteem are mediators. The following chapter will discuss the methodology for pursuing these research questions.
Chapter 3: Methods

3.1 Purpose of the study

This research aims to examine how risk and protective factors impact adolescent delinquency using the risk and resilience framework. Specifically, attention will be given to the relationship between religiosity and delinquency by exploring a mediation hypothesis. Association with substance using peers and self esteem are proposed mediators for this relationship. Secondary analyses will attempt to perform a multiple group analysis (or a moderating test) of this model using gender and race. This chapter will outline the methods used to perform these analyses by discussing the data source and collection procedures, the proposed model, a brief overview of the analysis method, discussion of the variables selected, and detailed description of the analysis process.

3.2 Data Source

The data source for this project is the Monitoring the Future project (MTF), formerly known as the National High School Senior survey (MTF, 2009). This is a nationally representative study of adolescents in 8th, 10th, and 12th grades. Youth in 12th grade have been surveyed annually since 1975 and the project expanded to include 8th and 10th graders in 1991 (ICPSR, 2009; MTF, 2009). The National Institute on Drug Abuse (through the National Institute of Health) funds this project and the University of
Michigan Survey Research Center collects and maintains the data (MTF, 2009). The purpose of MTF is to:

“explore changes in many important values, behaviors, and lifestyle orientations of contemporary American youth. Two general types of tasks may be distinguished. The first is to provide a systematic and accurate description of the youth population of interest in a given year, and to quantify the direction and rate of the changes taking place among them over time. The second task, more analytic than descriptive, involves the explanation of the relationships and trends observed to exist” (ICPSR, 2009). Findings from MTF have helped influence the creation of policy and to evaluate outcomes of policy, such as substance use reduction (MTF, 2009).

As discussed in the first chapter, there are several advantages to using MTF. First, the data from MTF is available from 2008, which provides a recent snapshot of adolescents. Second, MTF surveys youth over a variety of topics and includes questions not just about adolescents’ behavior, but also their beliefs and opinions. This enables researchers to construct risk and protective factors. Third, MTF contains more than just illicit substance use as measures of adolescent delinquency. There are measures of adolescents’ perceptions of peers using substances, adolescents’ participation in violent or criminal acts, and information about peers’ delinquent behavior.

### 3.2.1 Sampling procedure

Students are surveyed by University of Michigan staff in the spring of each school year (MTF, 2009). Data is collected from about 420 middle and high schools, including public and private and schools (MTF, 2009). Multistage random sampling is used to select schools (MTF, 2009). The first stage of the sampling process is identifying a geographic area and this is done based on the primary sampling units created by the Sampling Section of the Survey Research Center (ICPSR, 2009). The second stage is the
random selection of schools in that geographic area (MTF, 2009). The probability of selecting a school is proportionate to the size of its 8th and 10th grade classes (ICPSR, 2009). If a school that is selected declines to participate, then another school that is similar to it is chosen (ICPSR, 2009). Due to time and financial constraints, schools are asked to participate in the project for two consecutive years (ICPSR, 2009). The final stage is randomly selecting classes in each school (MTF, 2009). Each school is able to have 350 students participate in the survey. If schools have fewer than 350 students in the 8th, 10th, or 12th grades, then all of the students are surveyed (ICPSR, 2009). If schools have a large student body, then random sampling of classes is done to choose the 350 students to be surveyed (ICPSR, 2009).

Recruitment of schools randomly selected from that geographic region begins in the fall of the academic year (ICPSR, 2009). A letter is sent to the principle of the school and then a phone call is made (ICPSR, 2009). If the school agrees to participate, a staff member from the Institute of Social Research comes to the school two weeks before the survey is administered to meet the teachers whose classes will be participating in the study and give teachers fliers about the study as well as forms for parental consent (ICPSR, 2009). Each year around 18,000 students in 8th grades from about 150 schools, around 17,000 students in 10th grades from 140 schools, and around 16,000 students in the 12th grades from 133 schools are surveyed (MTF, 2009).

3.2.2 Data collection procedures

The questionnaires are self administered to 8th, 10th, and 12th grade students in their classroom (during a normal class period on one day) and they are distributed by
Institute for Social Research representatives and staff (MTF, 2009). These staff members follow protocol for distributing the surveys described in the project instruction manual (ICPSR, 2009). These representatives are introduced by the teachers to the students. The questionnaires are filled out by students using pencils for automated scanning purposes (ICPSR, 2009). It usually takes students about 45 minutes to complete the survey and accommodations are made for students who need extra time (ICPSR, 2009).

Students in the 8th and 10th grades are randomly assigned one of two different forms of the questionnaire and students in the 12th grade are randomly assigned one of six different forms of the questionnaire (ICPSR, 2009). Data from all students who were given one form of the questionnaire are made into publically available data sets (ICPSR, 2009). For example, for the 12th grade data from 2008, there are six different data sets available at the ICPSR website. While there may be a total 16,000 12th graders who completed the questionnaire, the data sets for each form may only contain around 2,000 12th graders. There is no combined data set for all of the 12th grade data. There is a core set of variables that are asked in each form of the questionnaire (ICPSR, 2009). Examples are substance use, background/demographic variables, and religious attendance and salience. The rest of the questions in the questionnaires address different combinations of substantive areas. There are 17 content areas: drugs, education, work and leisure, gender roles and family, population concerns, conservation, materialism, and equity, religion, social change, social problems, military, interpersonal relationships, concern for others, happiness, other personality variables, background and school, deviant behavior and victimization, and health habits and symptoms (ICPSR, 2009).
3.2.3 Protecting confidentiality

Measures have been taken to protect client identity. MTF project staff emphasize to students and parents that answers to questions on the survey are confidential and participation is strictly voluntary (ICPRS, 2009). As of 1997, no identifying information, such as name and address, is collected from participants (ICPSR, 2009). To further protect participant confidentiality, the University of Michigan makes slight changes to the data set before making it available for public use (ICPSR, 2009). This study will not contact or seek to identify study participants.

3.2.4 Sampling design for current study

The sample for this project will be drawn from MTF 2008, which was the most recent data available at the time this dissertation research began. This is a cross sectional sample of 8th, 10th, and 12th graders. A subset of the 12th grade data will be used, because some of the initial variables of interest were not found in the 8th and 10th grade data. A subset of the 12th grade data had to be chosen because not all of the same questions are asked in all six of the questionnaires. For example, self esteem, one of the mediators of interest, is only asked in forms 2 and 5. The subset was chosen by first identifying the variables of interest and then examining the codebooks for all of the data sets to determine which form to use. The specific subset of the 12th grade data to be used is the form 2 data because it includes measures of all of the independent and mediating variables. Additionally, this is the only form of the 2008 12th grade data that includes property and violent offenses, which will be used to create the dependent variable. There were other forms that potentially had more measures of religiosity, but ultimately form 2
was chosen because it had the most comprehensive measure of delinquency. The total size of this subset of the 12\textsuperscript{th} grade data is 2,423 (ICPSR, 2009).

### 3.3 Proposed model

This dissertation examines the relationship between religiosity and delinquency using structural equation modeling (SEM). Religiosity as well as the risk and protective factors will function as independent variables. The measures of delinquency will operate as dependent variables. Association with substance using peers and self esteem will be tested to mediate the relationship between religiosity and delinquency in the presence of the other risk and protective factors. Analyses will also test whether this mediation relationship changes as a function of gender and race. See Figure 1.

It is hypothesized that both association with substance using peers and self esteem will mediate the relationship between religiosity and delinquency. It is hypothesized that there will be differences in delinquent outcomes by race and gender in the mediation model.
3.4 Structural Equation Modeling (SEM) overview

Structural equation modeling (SEM) allows researchers to test complex relationships among different variables; “SEM’s goal is similar to that of factor analysis: to provide parsimonious summary of the interrelationships among variables” (Weston & Gore, 2006, p.720). This statistical method allows researchers to empirically test relationships between latent and observed variables based on the literature and theory (Schumacker & Lomax, 2004). SEM is particularly useful for testing how well theorized models of relationships fit the data for latent variables. SEM is a combination of factor and path analysis and emerged from psychology, psychometrics, and econometrics.
(Kaplan, 2000). SEM has been identified as an appropriate statistical technique to use for examining the mechanism through which the independent variable influences the dependent variable, making it appropriate for this analysis of potential mediators in this research (Tusaie & Dyer, 2004). There are two aspects to the estimated structural equation models: “(a) the measurement part, linking observed variables to latent variables via a confirmatory factor model and (b) the structural part, linking latent variables to each other via systems of simultaneous equations” (Kaplan, 2000, p. 5).

The use of SEM in the social sciences has increased over time (Weston & Gore, 2006). Schumaker and Lomax (2004) and Weston and Gore (2006) highlight some of the advantages of SEM over other analysis techniques. One advantage is that SEM is able to examine relationships that use multiple measures of a construct, enabling scholars to create construct validity of factors (Weston & Gore, 2006). Schumaker and Lomax (2004) note how validating theory requires more than just an examination of bivariate statistics. There is a need for procedures that can analyze multiple measures and variables at the same time and SEM can accomplish this (Schumaker & Lomax, 2004). Secondly, SEM accounts for measurement error by including it in the model (Baron & Kenny, 1986; Schumaker & Lomax, 2004). Thirdly, SEM technology has increased, allowing researchers to do more sophisticated techniques like multilevel modeling and testing interactions (Schumaker & Lomax, 2004).

Several computer software programs can run SEM analyses, such as Amos, EQS, LISREL-IV, or MPlus (Schumaker & Lomax, 2004). Mplus will be used for this analysis because it computes SEM analyses with the same quality and efficiency as the other
programs and also allows for the analysis of complex data and analyses with categorical indicator and outcome variables (MPlus, 2009).

3.5 Specific measures

This section provides conceptual and operational definitions for key constructs (see Table 1).

<table>
<thead>
<tr>
<th>Latent constructs</th>
<th>Observed items</th>
</tr>
</thead>
</table>
| Religiosity       | “How often do you attend religious services”  
|                   | “How important is religion in your life”  
|                   | “What is your religious preference”  
| Healthy Diet      | “How often do you: eat breakfast; eat green vegetables; eat fruit”  
| Educational       | “Which of the following [letter grades] bests describes your average grade so far in high school”  
| environment       | “Which of the following best describes your present high school program”  
|                   | “What is the highest level of schooling your mother completed”  
|                   | “To what extent have you participated in the following school activities during this school year: school newspaper or yearbook; music or performing arts; athletic teams”  
| Victimization     | “During the past 12 months how often has: something of yours (worth over $50) been stolen; someone threatened you with a weapon but not actually injured you; someone deliberately damaged your property”  
|                   | “Where did you grow up mostly”  
|                   | “Which of the following people live in the same household as you: Father (or male guardian)”  
| Association with substance using peers | “How many of your friends would you estimate: smoke cigarettes at least once a week; marijuana at least once a week; drink alcoholic beverages at least once a week; get drunk at least once a week”  
| Self esteem       | “Do you agree or disagree with the following statements: I take a positive attitude towards myself; on the whole I’m satisfied with myself; I feel that I can’t do anything right; I find that my life is not very useful”  
| Adolescent delinquency | “During the last four weeks, how many whole days of school have you: missed because you skipped or ‘cut’; gone to school, but skipped a class when you weren’t supposed to”  
|                   | “How frequently have you smoked cigarettes during the past 30 days”  
|                   | “On how many occasions have you had alcoholic beverages to drink during the last 30 days”  
|                   | “On how many occasions have you used: hallucinogens (other than LSD); cocaine; tranquilizers; narcotics during the last 12 months”  
|                   | “During the past 12 months, how often have you: hit an instructor or supervisor; used a knife or gun or some other thing (like a club) to get something from a person; damaged property at work on purpose; gotten into a serious fight in school or at work”  

Table 1: Latent constructs and observed items
3.5.1 Independent variable: religiosity

The main independent variable of interest in this study is religiosity. Generally, studies do not explicitly provide a conceptual definition of religiosity (Wallace et al., 2007). The implicit conceptual definition is that religion is an organized belief system centered around the divine (Dew et al., 2008). This study will explicitly provide a conceptual definition. Religiosity will be conceptually defined in this study, based on the literature review, as an organized belief system centered around the divine, an agent of social control, and a promoter of intragroup cooperation. As an agent of social control, religion “promotes conformity and inhibits deviance by encouraging the internalization of moral values and the acceptance of social norms” (Cochran, Wood, & Arneklev, 1994, p.93). Religion, as a promoter of intragroup cohesion, puts forth rules and expectations for morality, behavior, etc. that if followed by practitioners create a cohesive unit (Sosis & Bressler, 2003). The observed indicators of religion are found through empirical research on the impact of religiosity on adolescents’ lives. The following items are the operationalization of religiosity and are based on what is available in the data set and the literature.

The religiosity latent construct is comprised of three items. The items are “how often do you attend religious services” (answer choices range from never to once a week or more) and “how important is religion in your life” (answer choices range from not important to very important). Only the data from the Northeast, North central, and Southern region are publicly available. MTF removed the data from the Western region
because these questions were not asked of the California participants and because of this researchers could more easily identify which respondents were from California.

Additionally, another measure of religiosity is available in the data set. One item asks participants to identify their religious preference. This item was not included in the publically available data set, but was obtained by applying to the University of Michigan for access to this variable. In the original item, there are 18 possible answer choices, such as Buddhist, Muslim, Unitarian, and Episcopal. However, the University of Michigan only releases a recoded variable collapsing the 18 possible answer choices into 4, none, liberal, moderate, or conservative. The 18 possible answer categories were labeled as none, liberal, moderate, or conservative by University of Michigan. The liberal religious affiliations are Presbyterian, Episcopal, United Church of Christ, Roman Catholic, Unitarian, and Jewish. The moderate religious affiliations are Methodist, Lutheran, Disciples of Christ, and Eastern Orthodox. The conservative religious affiliations are Baptist, Churches of Christ, other Protestant, Latter Day Saints, Muslim, Buddhist, and other.

3.5.2 Risk and protective factors

Conceptually, the definition of a risk factor is something that is a “statistical correlate[e] of poor or negative outcomes” (Masten, Best, & Garmezy, 1990, p.426). The conceptual definition of protective factors is that they “modify, ameliorate, or alter a person’s response to some environmental hazard that predisposes to a maladaptive outcome” (Rutter, 1985, p.600). Based on the work of Stouthamber-Loeber et al. (2002) discussed in the previous chapter, risk and protective factors in this dissertation are
viewed as a latent construct. Risk and protective factors will be considered to be a second order factor comprised of four latent constructs: health promoting behaviors, school, past victimization, and religiosity. The religiosity dimension was discussed in the independent variables section and the remaining three dimensions are discussed below. These three domains were created based on the literature and will function as independent variables in analyses. Confirmatory factor analysis as part of the structural equation modeling (discussed in following sections) will be used to evaluate whether these domains match the data and the domains will be modified accordingly.

The healthy diet dimension relates to the amount of health promoting behavior an adolescent engages in regarding diet. In chapter 2, health promoting behaviors were shown to be a protective factor against delinquency. However, this data set is limited in the amount of health promoting behaviors available for analysis. Of the available observed items, those related to diet are the only ones included. It is recognized that while diet practices are an aspect of health promoting behavior, there are other aspects that are not included. Therefore this construct will be referred to as the healthy diet domain. Health promoting behavior is measured using the following items: “how often do you eat breakfast, eat green vegetables, and eat fruit” (answer choices range from never to every day).

The educational environment dimension conceptually refers to the school environment, performance of adolescents, and parental education background. Aspects of the school environment are school location, grade average of the student, quality of the teachers/materials, and adolescents’ school attendance (Corcoran & Nicols-Casebolt, 2004; Rew & Horner, 2003). Again, the data set is limited in the observed items
representing this construct. Questions such as school connectedness and interactions with teachers are not asked in MTF. Despite this, there are some items present to define this construct. The first is grade point average and it is measured by asking respondents “which of the following bests describes your average grade so far in high school: A, A-, B+, B, B-, C+, C, C-, or D.” One item asks respondents to “describe their high school program” and answer choices are college prep, vocational/technical, general, or other/don’t know.

The next set of items asks respondents about school activities. The question asks “to what extent have you participated in the following school activities during this school year: school newspaper or yearbook, music or performing arts, or athletic teams.” The response categories range from not at all to great. The last item is mother’s highest education achieved and the answer choices range from grade school to graduate school. The literature shows that mother’s education level can be a proxy for social economic status (Baum & Ruhm, 2009; Desai & Alva, 1998). Social economic status (SES) has been linked to academic performance and achievement. It is often assumed that SES is has a direct and positive relationship with school performance; however scholars have found that that assumption does not always hold (Johnson, MaGue, & Iacono, 2007; Sackett, Kuncel, Arneson, Cooper, & Waters, 2009). Nevertheless, the fact that SES is a correlate of school performance, albeit perhaps not as strong as initially thought, makes mother’s education theoretically appropriate to include in this section (Malecki & Demaray, 2006).

The last dimension is past victimization. Similar to the Department of Justice and Office of Justice Programs and definition used in the National Crime Victimization
Survey, this dissertation conceptually defines victimization as illegal acts committed against adolescents (Catalono, 2005; “Survey Methodology,” 2005). This includes violent crimes, sexual assault, property damage, and being threatened (Catalono, 2005; Kim & Tajima, 2009). Between 1993 and 2005, the 12 to 19 age group had the highest rates of victimization than any other age group (Aceves & Cookston, 2007; Catalono, 2005; Shaffer & Ruback, 2002). Victimization threatens adolescents’ ability to successfully transition into adulthood by increasing risks of developing mental health disorders and participation in delinquent behavior (Aceves & Cookston, 2007; Barker, Arseneault, Brendgen, Fontaine, & Maughan, 2008; Turner, Finkelhor, & Ormrod, 2010).

There are several observed indicators for victimization in MTF. The data set lacks measures of sexual victimization, which means that an important part of the victimization construct is missing. Nevertheless, the direct measures of victimization are as follows: “during the past 12 months how often has something of yours (worth over $50) been stolen, has someone threatened you with a weapon but not actually injured you, or has someone deliberately damaged your property (answer choices range from not at all to five or more times).” Items were chosen based on results from EFA in addition to examining the data set to find items with variability in responses. One item asks about presence of a father figure in respondents’ household: which of the following people live in the same household with you, father (answer choices are yes or no). It has been documented that adolescents’ family unit, family composition, and parental relationship can protect adolescents from victimization (Leadbeater, Banister, Ellis, & Yeung, 2008; Walker, Maxson, & Newcomb, 2007). Including the item about presence of father in home is relevant and theoretically meaningful in this section given that research has
shown that lack of two parent homes may increase adolescents’ risk of victimization (Aceves & Cookston, 2007; Walker, Maxson, & Newcomb, 2007). Another item asks the urbanicity of where respondents grew up. The question asks “where did you grow up mostly” and answer choices range from on a farm to a suburb of a very large city. Urbanicity has a relationship with victimization. Even though the rates of certain types of victimization, such as property crime, have fallen from 1993 to 2005, urban areas had higher instances of victimization than suburban or rural areas (Aceves & Cookston, 2007; Catalono, 2005).

3.5.3 Dependent variable: adolescent delinquency

The dependent variable is adolescent delinquency. There are different types of delinquent behaviors that fall along a spectrum from status or minor offenses to violent or serious offenses. In operationalizing delinquency, researchers have created two dependent variables, one for minor offenses and the other for serious offenses (Kim, 2003; Haynie, Giordano, Manning, & Longmore, 2005). Minor or status offenses are defined as “behavior that is unlawful for children, even though the same behavior is legal for adults” (Steinhart, 1996, p.86). Minor offenses will be operationalized as smoking, alcohol use, school truancy, and school suspension (Bartollas, 2003; Benda & Corwyn, 1997; Kim, 2003; Siegel & Senna, 1985; Steinhart, 1996).

The following items will be used for smoking and alcohol use: “how frequently have you smoked cigarettes during the past 30 days (answer choices range from none to two or more packs); on how many occasions have you had alcoholic beverages to drink during the last 30 days (answer choices range from zero to forty or more occasions).” The
following items will be used to measure school truancy: “during the last four weeks, how many whole days of school have you missed because you skipped or “cut” (answer choices range from none to eleven or more); how often have you gone to school, but skipped a class when you weren’t supposed to (answer choices range from none to twenty one or more).”

Violent or serious offenses are behaviors committed by adolescents that are prohibited by the legal statutes (Siegel & Senna, 1985). These behaviors would be considered to be a misdemeanor or felony if committed by an adult (Bartollas, 2003). They are operationalized as drug use and non drug related crimes (Kim, 2003; Haynie, Giordano, Manning, & Longmore, 2005). The items measuring drug use are: “on how many occasions have you used hallucinogens (other than LSD), cocaine, tranquilizers, or narcotics during the last 12 months (answer choices range from zero to forty or more occasions).” The following items will be used to measure non drug related crimes: “during the past 12 months, how often have you hit an instructor or supervisor, used a knife or gun or some other thing (like a club) to get something from a person, damaged property at work on purpose, or gotten into a serious fight in school or at work (answer choices range from not at all to five or more times).”

3.5.4 Mediating variables

Mediating variables are the mechanism through which the independent variable impacts the dependent variable (Baron & Kenny, 1986). A mediating relationship is demonstrated when an independent variable is significantly related to a mediating variable, the mediating variable is significantly related to the dependent variable, and the
direct relationship between the independent and dependent variables is zero or markedly decreases with the presence of the mediating variable (Baron & Kenny, 1986). Testing mediation hypotheses are helpful for identifying how one factor impacts another. This knowledge can be used to inform prevention research and program development. Risk and resilience scholars highlight the importance of mediation analyses in research to increase knowledge about how risk and protective factors operate (Rutter, 2007; Wright & Masten, 2005). The two mediating variables tested in this study are association with substance using peers and self esteem.

Association with substance using peers conceptually refers to what proportion of adolescents’ peer network is comprised of peers engaging in illegal substance use (Haynie, 2001; Haynie, 2002; Haynie & Osgood, 2005; Salzinger et al, 2002). Association with substance using peers is operationalized using the following items: “how many of your friends would you estimate smoke cigarettes, smoke marijuana, drink alcoholic beverages, or get drunk at least once a week (answer choices range from none to all).” There were additional items in the data set that asked respondents “how many of their friends used other substances like PCP, LSD, and quaaludes,” but they were not included because there was little variation in the answer responses. Over eighty percent of respondents indicated that none of their friends use these substances. There was greater variety of responses when asking respondents about friends’ use of cigarettes, marijuana, and alcohol.

Self esteem consists of the thoughts and emotions individuals have about themselves developed through the feedback others give, reflecting on individuals’ own behavior, and observations of others (Judge, 2009; Swann, Chang-Schneider, and
McClarty, 2007). It is operationalized using the following items: “do you agree or disagree with the following statements, I take a positive attitude towards myself, on the whole I’m satisfied with myself, I feel that I can’t do anything right, and I find that my life is not very useful (answer choices range from disagree to agree).”

3.5.5 Secondary analysis: Testing moderating variables, gender and race, using multiple group analysis

Baron and Kenny (1986) define a moderator as “a qualitative…or quantitative…variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable” (p. 1174). Moderation means that the “causal relation” between religiosity and delinquency changes “as a function of the moderator variable” (Baron & Kenny, 1986, p.1174). Two moderating variables that will be tested are gender and race. This is done in SEM through multiple group analysis.

The literature suggests that the impact of association with substance using peers and self esteem differs by gender and race. For example, Haynie & Osgood (2005) found that when including association with delinquent peers as a mediator of delinquency, “the relationships of age and race to delinquency actually became stronger” (p.1123). This indicates that perhaps for some racial groups, having association with delinquent peers as a mediator reveals a different relationship to delinquency than when that mediator is not included. Additionally, males tend to have higher percentages of delinquent peers than females do, suggesting that there is a value in doing a multiple group analysis of gender
for this model (Knecht, Snijders, Baerveldt, Steglich, & Raub, 2010; Lonardo, Giordano, Longmore, & Manning, 2009).

Bachman et al. (2010) evaluated self esteem in adolescents by analyzing MTF data sets from 1991 to 2008. They found that African Americans had the highest self esteem rates, followed by Whites and then Asians. One possible explanation for this finding is that African Americans are taught to have high self esteem to combat discrimination (Bachman et al., 2010). Also, self esteem can be thought of as a Western concept, perhaps explaining why Asian Americans score lower on self esteem measures (Bachman et al., 2010). Bachman et al. (2010) add to their report that males have higher self esteem scores than females. Examining how the mediation model changes based on gender and race will result in knowledge not just about how religiosity operates, but also for whom this impact is seen.

Gender is measured by asking whether respondents are male or female. Race is measured by asking whether respondents are African American or Black, Mexican American or Chicano, Cuban America, Puerto Rican, other Hispanic or Latino, Asian American, White, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander. However to protect client identity, the publicly available data collapses race into three categories, black, white, and Hispanic.
3.6 Data Analysis

3.6.1 Assumptions of SEM and data preparation

There are several assumptions of SEM. The data should be normally distributed, variables are usually continuous, and the independent and dependent variables should have a linear relationship (Kline, 2005). Some analyses will be done using SPSS version 17 to help examine the data and evaluate whether the assumptions are upheld. Univariate analysis will include descriptive statistics. Bivariate analyses will include assessing correlations, chi square tests between the independent variables and other variables of interest, and either t test or ANOVA tests between the dependent variables and other variables of interest. Histograms (displaying a normal curve), frequency distributions, and skewness and kurtosis statistics will be used to examine the normality of the data. Generating the minimum, maximum, standard deviation, and mean will be used to also explore the data for outliers. Multivariate statistics will be used to plot the predicted value of the dependent variable against the residuals (or error between the predicted and actual value of the dependent variable) to test for linearity, another assumption of SEM. Correlations will be used to examine potential multicollinearity of the data, which is important to be aware of in doing SEM.

The examination of variables revealed that the delinquency variables are highly right skewed and have many outliers. This is not a surprise, as the frequency distributions reveal that most adolescents do not indicate large amounts of delinquency and a small amount have moderate to high involvement. Transforming the variables did not correct for the skewness and non normality. This will be addressed by using an estimator in
Mplus that does not make assumptions about variables’ distributions. This estimator is the variance adjusted weighted least squares or WLSMV. WLSMV is part of a grouping of estimators (asymptotic distribution free or elliptical distribution) that make no assumptions about variables’ distributions (Kline, 2005). Therefore, it is appropriate to use with non normal data and categorical indicators (Brown, 2006).

While SEM is ideally conducted with continuous variables, it is possible to run models that have latent factors with categorical indicators. Mplus has the capability of running SEM analyses with categorical indicators and/or outcome measures. In this research, there are categorical indicators for many of independent variables. With categorical indicators, Mplus uses thresholds instead of intercepts or means in models (Muthén & Muthén, 1998-2010). The number of thresholds is the number of categories in the variables minus one (Muthén & Muthén, 1998-2010). This means that again the WLSMV estimator is the most appropriate because it can be used with non normal distributions in addition to categorical indicators.

Regarding linearity, the independent and dependent variables appear to be linearly related. Tests of linearity can be done using plots. One approach is to graph the unstandardized residuals against an independent variable or plot the unstandardized residuals against the predicted values of the dependent variable, which Keith writes can be thought of as a “composite of the independent variables” (Keith, 2006, p. 189). These residuals can be gained through regression analysis in SPSS. Next, a regression line is fitted to the graph. The regression line is the mean of the residuals (Keith, 2006). Then, a lowess line can be fitted to the graph, which is a non parametric line that “does not
impose the requirement of linearity” (Keith, 2006, p. 188). Violations of linearity can be seen if the lowess line is far from the regression line. Running these graphs does not indicate a violation of linearity for these independent and dependent variables.

Two remaining issues to address regarding data preparation for SEM are multicollinearity and the analysis of complex data. Multicollinearity occurs when independent variables are highly correlated with each other (Keith, 2006). Multicollinearity can be examined by looking at the correlation matrix or tolerance statistics (Keith, 2006; Kline, 2005). This issue is of concern to SEM analyses because it can result in a singular matrix, which makes analyses difficult and often results in error messages (Kline, 2005).

The correlation matrix indicated a potential concern with multicollinearity with only two sets of variables measuring association with substance using peers and self esteem. For association with substance using peers, the question about how many friends drink alcoholic beverages or get drunk at least once a week had a correlation of .746. The variable asking how many friends got drunk at least once a week had the lowest factor loading with the rest of the items measuring association with delinquent peers and will not be used. For the self esteem variable, the statements about my life is not useful and I do the wrong thing had a correlation of .731. I do the wrong thing had the lowest factor loading and will not be used in analyses. There were no other concerns with multicollinearity in the data.

Related to complex data, MTF employed a multi stage random sample design where geographic areas were selected, then schools within those areas were selected, and
finally classrooms in those schools were selected to participate in the survey (MTF website). This means that there is “an unequal probability of selection” (Muthén & Muthén, 1998-2010, p.233) for participants in the study and this needs to be taken into account in analyses of the data. MTF provides sample weights, which mirror the probability of a participant being selected, and these will be used.

### 3.6.2 Description of the SEM procedure

The creation of a structural equation model and analysis follows the following steps. Theory informs hypothesized model specification (and model specification can also inform theory) and the model specification determines what the sample is and what will be measured (Kaplan, 2000). It is the researcher’s goal to create a model that reflects the model as it actually exists in the population (Schumaker & Lomax, 2004). Difference between the hypothesized model and the true model means the model is misspecified. Model misspecification can occur because certain variables were omitted or included and misspecification results in estimates of parameters that are biased and unreliable (Schumaker & Lomax, 2004).

Once a model has been specified, the next step is model identification. In this stage, researchers investigate whether a distinctive set of estimates can be determined (Schumaker & Lomax, 2004). For example, if the model based on theory and the literature says that X + Y = 10 the model is not identified because there are innumerable possibilities for the values of X and Y. If the model states that 5 + Y = 10, then there is only one possible value for Y and there is not an identification problem (Schumaker &
Parameters in the model are either free (meaning its value is not known and it will be estimated), fixed (meaning it has a specific value) or constrained (meaning its value is not known, but is restricted) (Schumaker & Lomax, 2004). There are also different types of model identification. Models can be underidentified if there are innumerable possibilities for what their values could be. Models are just-identified if “all of the parameters are uniquely determined because there is just enough information” in the model (Schumaker & Lomax, 2004, p.64). Lastly, models could be overidentified if there are more than ways of estimating parameters because there is more information than needed in the model.

Thirdly, the model is estimated and this involves coming up with estimates for the parameters as they would be in the population: “we want to obtain estimates for each of the parameters specified in the model that produce the implied matrix Σ, such that the parameter values yield a matrix as close as possible to S, our sample co-variance matrix of the observed or indicator variables” (Schumaker & Lomax, 2004, p.64). There are different estimation techniques that help reduce the difference between the population and sample, such as maximum likelihood (ML), generalized least squares (GLS), or unweighted or ordinary least squares (ULS or OLS) (Brown, 2006; Schumaker & Lomax, 2004). The analyses in this research use WLSMV because it is appropriate to use with non normal data and categorical indicators (Brown, 2006).

The next step is to conduct analyses to determine how well the model fits the data. There are two ways to examine the model fit. One way is to look at “global-type omnibus test of fit” of the whole model and another is to look at how each parameter fits the model.
(Schumaker & Lomax, 2004, p.69). There are many goodness of fit indexes available to measure how well the model fits the data. In fact, Brown (2006) and Kline (2005) note how this is a popular area of research and that notions of which goodness of fit indexes to use and what criteria indicates good fitting model changes. Nevertheless, there are some overarching conclusions that can be made about these indexes. First, they only describe how well the model generally fits the data, so there may be parts of the model that fit the data well and other parts that do not. Second, it is not advised to rely only on one index to determine if the model fits the data well. Third, goodness of fit indexes do not make any conclusions about the model’s importance based on theory. It is possible for a goodness of fit index to report that a model fits the data well, but the model is theoretically meaningless (Kline, 2005).

The goodness of fit indexes that will be reported in this research are the model chi square, root mean square error of approximation or RMSEA, comparative fit index or CFI, and the Tucker-Lewis index or TLI. The null hypothesis for the model chi square test is that the model fits the data perfectly. Therefore, indications of a good fitting model are seen when chi square is insignificant, because insignificant results mean that the null cannot be rejected. The chi square test approximates a central chi square distribution.

There are several concerns with the chi square test. First, with larger sample sizes, chi square is more likely to be significant “even though differences between observed and predicted covariances are slight” (Kline, 2005, p.136). Additionally, the null hypothesis that the model fits the data perfectly may be idealistic. Despite these concerns, chi square is routinely reported as a goodness of fit test, but it is not relied upon as the sole measure.
of model fit (Kline, 2005). Chi square and the degree of freedom will be reported in these analyses.

RMSEA approximates a non central chi square distribution and takes into account how complex models are. RMSEA does not have a null hypothesis that the model fits the data perfectly. This test examines how the model may not fit the data well because of two issues. The first is the error of approximation, which means that the model may not match the covariance matrix in the population. The second is the error of estimation, which accounts for disparities between the sample and population covariance matrix (Kline, 2005). The values for RMSEA range from 0 to 1 and lower values indicate better fit. It is generally accepted that values less than .05 suggest a good fitting model (Brown, 2006; Kline, 2005).

CFI and TLI compare the fit of the proposed model with the fit of a baseline model (Brown, 2006). CFI also does not make the assumption that the researcher’s model perfectly fits the population (Kline, 2005). CFI values also range from 0 to 1, with higher values indicating better model fit (Brown, 2005). More specifically, values above .95 are considered to have acceptable model fit and values below .90 indicate poor model fit (Cheung & Rensvold, 2002; Schermelleh-Engel, Moosbrugger, & Müller, 2003). TLI, similar to RMSEA, accounts for the complexity of the model, but unlike CFI the values for TLI can be outside of the 9 to 1 range. Despite this, TLI is usually evaluated similarly to CFI, with values closer to 1 indicating good model fit (Brown, 2006).

The last step is to modify the model (Kaplan, 2000). There are a variety of ways of examining whether the model should be modified, which hopefully results in a model
that fits the data better (Schumaker & Lomax, 2004). Researchers should consider theory and literature in making decisions about what variables or paths to change, omit, or add (Schumaker & Lomax, 2004). Also, researchers can examine the statistical significance of parameters, the residual matrix, as well as modification indices generated by software programs (Schumaker & Lomax, 2004). Mplus generates modification indices, expected parameter change indices, and standardized expected parameter change indices (Muthén & Muthén, 1998-2010). The modification indices reveal how much the chi square would decrease by if a particular parameter was estimated freely instead of fixed (Muthén & Muthén, 1998-2010). Once a new model has been specified, the process of examining fit and potentially modifying the model begins again.

Based on the literature review and conceptual framework discussed in Chapter 2, the SEM process begins with confirmatory factor analysis (CFA) or creating the measurement model. CFA is the initial part of conducting SEM analyses and is a way of testing or confirming “which sets of observed variables share common variance-covariance characteristics that define theoretical constructs or factors (latent variables)” (Schumaker & Lomax, 2004, p.168). With CFA researchers test a predetermined hypothetical model of how many factors latent variables have and which observed variables are correlated with what factors (Schumaker & Lomax, 2004). Performing CFA then follows the steps previously discussed of model specification, model identification, model estimation, model testing, and model modification (Schumaker & Lomax, 2004). CFA analyses will be performed on the risk and protective factors, then the mediating variables, and finally on the delinquency variable. This step is crucial for finalizing which variables will be in the model and determining what underlying constructs there are.
Modifications, such as correlating errors between variables, will be done with caution and consultation of not just the software’s output, but also the literature.

Once a satisfactory CFA model that is theoretically meaningful and has reasonable goodness of fit indexes has been identified, structural components to the model will be added and tested. The structural model identifies and tests proposed causal relationships between latent variables (Kline, 2005). It is important to note that several pieces of information are needed to state that one variable (X) causes another (Y): X must occur before Y in time, the direction of proposed relationship should be correctly identified (Y should not cause X and they should not be a feedback loop), and the relationship between X and Y is still there even in the presence of other variables (Kline, 2005). This data set is cross sectional and therefore conclusions about causality cannot be made.

In path analysis, direct relationships among factors are highlighted as well as covariance between observed indicators or factors and also an error term for the dependent variable, which is variability in the variable that is not explained by the model (Shumaker & Lomax, 2004). In model diagrams, direct relationships are shown with straight lines, covariance is demarked with a curved line, and error terms have circles around them and point to the dependent variable. Because there are many possible ways for variables to be related, it is essential to consult the literature and ensure that proposed relationships among variables are theoretically meaningful. After the model is specified, the steps of model identification, model estimation, and model modification are done.

An important reason for conducting reliability tests and doing exploratory factor analysis for the variables of interest is because path analysis assumes that independent
variables are measured without error (Kline, 2005). Measurement error in the independent variables results in inaccurate results in the path analysis. Therefore, knowing how reliable measures are is important (Kline, 2005). All of the measures for this analysis are within the acceptable range.

After a path analysis has been completed, the full SEM model will be tested. SEM models are comprised of the measurement component (derived from the CFA analyses) and the structural component (derived from the path analysis) (Shumaker & Lomax, 2004). In this analysis, the full SEM model will be run with religiosity and the risk and protective factors and the delinquency variable. Then the SEM model will be run with the mediating variables, association with substance using peers and self esteem. The steps of analyzing the models from model specification to model modification will be done for each model.

The final SEM analysis includes performing a multiple group analysis with gender and race. This will be done using a type of analysis called multiple group analysis, which tries to determine whether the parameters for the model are the same for different groups or in other words if variables measure the same construct across different groups (Kline, 2005; Muthén & Asparouhov, 2003). This is analyzed by running two versions of the model where one model has equality constraints across the group (more restrictive model) and another model does not have equality restraints across the groups (less restrictive model) (Kline, 2005). The models are compared by examining the chi square difference statistic and from this, “if the fit of the constrained model is much worse than that of unconstrained model, we can conclude that the parameters may not be equal in the populations from which the samples were drawn (Kline, 2005, p. 290). If the fit is not
worse, then it means that constructs are being measured similarly across groups (Kline, 2005). This is called measurement invariance and this is what is needed in order to determine that an interaction (or moderation effect) occurs (Muthén & Muthén, 1998-2010).

Using the WLSMV estimator in Mplus means that the default settings for the restrictive model are as follows: “thresholds and factor loadings [are] constrained to be equal across groups; scale factors fixed at one in one group and free in the others; factor means fixed at zero in one group and free in the others” (Muthén & Muthén, 1998-2010, p. 433). For the less restrictive model, the factor loadings and thresholds are allowed to be free or vary across groups (Muthén & Muthén, 1998-2010). The more restrictive model is considered to be the null model and the less restrictive model is considered to be the alternative model. Mplus estimates the alternative model and saves the derivatives from that model. Then, Mplus estimates the null model and computes a chi square difference test using the derivatives from the null and alternative models. If the chi square difference test is not significant, then the more restrictive model does not worsen model fit and measurement invariance has been documented. With this documentation, comparisons between multiple groups can be made.
Chapter 4: Results

This chapter outlines the results of the analyses. Descriptive statistics will be provided. Then, the measurement and structural models will be discussed in addition to the full SEM model with the mediators and moderators.

4.1 Descriptive statistics

Table 2 has a breakdown of descriptive statistics. There are a total of 2423 participants in this data set. There are 1111 males (49% of the sample) and 1156 females (51%). Regarding racial breakdown, 280 or 13.7% identified as Black, 1406 or 69% of the sample reported being White, and 352 or 17.3% responded as Hispanic. Given that all of the respondents in this data set are in the 12th grade, there is little variability in age. Respondents are asked if they are younger than 18 (1047 said they were) or 18 or older (1335 responded yes). Because there is little variability, age is not included in the analyses. Additional demographic statistics show that most mothers, 88.2%, were high school graduates or had higher education. Seventy two point four percent of respondents reported that their father lived in the same household. Nearly one quarter of the sample or 22.1% of adolescents lived in a small town, with 12.8% living in a medium sized city, and 10.8% and 10.9% living in a large city or suburb, respectively. In terms of high school type, 55.1% attended a college preparatory high school, 31.5% went to a general
education high school, and 4.8% attended a vocational or technical high school. The
descriptive statistics for risk and protective factors and mediating variables are in Table 3.

For all of the variables, data extended over all possible categories.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1111 (49%)</td>
</tr>
<tr>
<td>Female</td>
<td>1156 (51%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>280 (13.7%)</td>
</tr>
<tr>
<td>White</td>
<td>1406 (69%)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>352 (17.3%)</td>
</tr>
<tr>
<td>Father in household</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1695 (72.4%)</td>
</tr>
<tr>
<td>No</td>
<td>647 (27.6%)</td>
</tr>
<tr>
<td>Urbanicity</td>
<td></td>
</tr>
<tr>
<td>Don’t know/Mixed</td>
<td>264 (10.9%)</td>
</tr>
<tr>
<td>Farm</td>
<td>76 (3.1%)</td>
</tr>
<tr>
<td>Country</td>
<td>210 (8.7%)</td>
</tr>
<tr>
<td>Small town</td>
<td>535 (22.1%)</td>
</tr>
<tr>
<td>Medium city</td>
<td>311 (12.8%)</td>
</tr>
<tr>
<td>Suburb</td>
<td>262 (10.8%)</td>
</tr>
<tr>
<td>Large city</td>
<td>265 (10.9%)</td>
</tr>
<tr>
<td>Suburb</td>
<td>192 (7.2%)</td>
</tr>
<tr>
<td>Very large city</td>
<td>180 (7.4%)</td>
</tr>
<tr>
<td>Suburb</td>
<td>128 (5.3%)</td>
</tr>
<tr>
<td>Mother’s education</td>
<td></td>
</tr>
<tr>
<td>Grade school</td>
<td>84 (3.6%)</td>
</tr>
<tr>
<td>Some high school</td>
<td>191 (8.2%)</td>
</tr>
<tr>
<td>High school grad</td>
<td>567 (24.2%)</td>
</tr>
<tr>
<td>Some college</td>
<td>490 (20.9%)</td>
</tr>
<tr>
<td>College grad</td>
<td>625 (26.7%)</td>
</tr>
<tr>
<td>Grad school</td>
<td>288 (12.3%)</td>
</tr>
<tr>
<td>Don’t know</td>
<td>97 (4.1%)</td>
</tr>
<tr>
<td>High school type</td>
<td></td>
</tr>
<tr>
<td>College prep</td>
<td>1274 (55.1%)</td>
</tr>
<tr>
<td>General</td>
<td>729 (31.5%)</td>
</tr>
<tr>
<td>Vocational/technical</td>
<td>110 (4.8%)</td>
</tr>
<tr>
<td>Other/Don’t know</td>
<td>198 (8.6%)</td>
</tr>
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</table>

Table 2: Descriptive statistics for sociodemographic variables.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
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<td>Religiosity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service attendance</td>
<td>2.59</td>
<td>1.097</td>
<td>1-4</td>
</tr>
<tr>
<td>Importance</td>
<td>2.66</td>
<td>1.081</td>
<td>1-4</td>
</tr>
<tr>
<td>Preference</td>
<td>2.851</td>
<td>1.107</td>
<td>1-4</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eat breakfast</td>
<td>3.73</td>
<td>1.718</td>
<td>1-6</td>
</tr>
<tr>
<td>Eat fruit</td>
<td>3.92</td>
<td>1.447</td>
<td>1-6</td>
</tr>
<tr>
<td>Eat vegetables</td>
<td>4.19</td>
<td>1.332</td>
<td>1-6</td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>6.43</td>
<td>1.961</td>
<td>1-9</td>
</tr>
<tr>
<td>Publications</td>
<td>1.5</td>
<td>1.104</td>
<td>1-5</td>
</tr>
<tr>
<td>Performing arts</td>
<td>2.05</td>
<td>1.556</td>
<td>1-5</td>
</tr>
<tr>
<td>Athletic teams</td>
<td>2.72</td>
<td>1.748</td>
<td>1-5</td>
</tr>
<tr>
<td>Victimization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was threatened with weapon</td>
<td>1.34</td>
<td>.849</td>
<td>1-5</td>
</tr>
<tr>
<td>Had item worth more than $50 stolen</td>
<td>1.44</td>
<td>.822</td>
<td>1-5</td>
</tr>
<tr>
<td>Had property damaged</td>
<td>1.47</td>
<td>.855</td>
<td>1-5</td>
</tr>
<tr>
<td>Peers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends smoke cigarettes</td>
<td>2.39</td>
<td>1.004</td>
<td>1-5</td>
</tr>
<tr>
<td>Friends use marijuana</td>
<td>2.50</td>
<td>1.102</td>
<td>1-5</td>
</tr>
<tr>
<td>Friends drink alcohol</td>
<td>3.30</td>
<td>1.267</td>
<td>1-5</td>
</tr>
<tr>
<td>Self esteem</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life isn’t useful</td>
<td>4.23</td>
<td>1.114</td>
<td>1-5</td>
</tr>
<tr>
<td>Satisfied with self</td>
<td>4.12</td>
<td>1.044</td>
<td>1-5</td>
</tr>
<tr>
<td>Positive attitude</td>
<td>3.99</td>
<td>1.053</td>
<td>1-5</td>
</tr>
</tbody>
</table>

Table 3: Descriptive statistics for other risk and protective factors and mediators.
<table>
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<tr>
<th></th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gender</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Race</td>
<td>0.017</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Urbanicity</td>
<td>-0.018</td>
<td>0.047*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Dad in home</td>
<td>-0.034</td>
<td>0.130**</td>
<td>0.044*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Mom education level</td>
<td>-0.043*</td>
<td>-0.107**</td>
<td>0.056**</td>
<td>0.054**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6. Religious service</td>
<td>0.043</td>
<td>-0.065**</td>
<td>0.028</td>
<td>0.116**</td>
<td>0.097**</td>
<td>1</td>
</tr>
<tr>
<td>7. Religion importance</td>
<td>0.088**</td>
<td>-0.076**</td>
<td>-0.019</td>
<td>0.007</td>
<td>0.009</td>
<td>0.649**</td>
</tr>
<tr>
<td>8. Religious preference</td>
<td>0.01</td>
<td>-0.173**</td>
<td>-0.049*</td>
<td>-0.046*</td>
<td>0.013</td>
<td>0.248**</td>
</tr>
<tr>
<td>9. High school type</td>
<td>-0.055**</td>
<td>0.039</td>
<td>-0.102**</td>
<td>-0.168**</td>
<td>-0.114**</td>
<td>-0.126**</td>
</tr>
<tr>
<td>10. Grades</td>
<td>0.110**</td>
<td>0.005</td>
<td>0.021</td>
<td>0.157**</td>
<td>0.140**</td>
<td>0.216**</td>
</tr>
<tr>
<td>11. School publications</td>
<td>0.094**</td>
<td>-0.006</td>
<td>-0.017</td>
<td>0.016</td>
<td>0.01</td>
<td>0.054*</td>
</tr>
<tr>
<td>12. School arts</td>
<td>0.085**</td>
<td>-0.039</td>
<td>-0.016</td>
<td>0.017</td>
<td>0.053*</td>
<td>0.120**</td>
</tr>
<tr>
<td>13. School sports</td>
<td>-0.129**</td>
<td>-0.037</td>
<td>0.001</td>
<td>0.094**</td>
<td>0.097**</td>
<td>0.171**</td>
</tr>
<tr>
<td>14. Eat breakfast</td>
<td>0.036</td>
<td>0.043</td>
<td>0.034</td>
<td>0.105**</td>
<td>0.085**</td>
<td>0.163**</td>
</tr>
<tr>
<td>15. Eat vegetables</td>
<td>0.060**</td>
<td>0.013</td>
<td>0.025</td>
<td>0.102**</td>
<td>0.107**</td>
<td>0.142**</td>
</tr>
<tr>
<td>16. Eat fruit</td>
<td>0.070**</td>
<td>0.047</td>
<td>0.025</td>
<td>0.092**</td>
<td>0.098**</td>
<td>0.152**</td>
</tr>
<tr>
<td>17. Someone robbed you</td>
<td>-0.087**</td>
<td>-0.075**</td>
<td>0.016</td>
<td>-0.123**</td>
<td>-0.060**</td>
<td>-0.047**</td>
</tr>
<tr>
<td>18. Someone threatened</td>
<td>-0.146**</td>
<td>-0.046*</td>
<td>-0.053**</td>
<td>-0.107**</td>
<td>-0.006</td>
<td>-0.066**</td>
</tr>
<tr>
<td>19. Someone damaged property</td>
<td>-0.123**</td>
<td>0.011</td>
<td>0</td>
<td>-0.091**</td>
<td>-0.027</td>
<td>-0.033</td>
</tr>
<tr>
<td>20. Positive self attitude</td>
<td>-0.043*</td>
<td>-0.004</td>
<td>0.047*</td>
<td>0.065**</td>
<td>0.022</td>
<td>0.149**</td>
</tr>
<tr>
<td>21. Satisfied with self</td>
<td>0.003</td>
<td>0.014</td>
<td>0.055*</td>
<td>0.077**</td>
<td>0.055*</td>
<td>0.102**</td>
</tr>
<tr>
<td>22. Life not useful</td>
<td>-0.01</td>
<td>-0.014</td>
<td>0.058**</td>
<td>0.084**</td>
<td>0.048*</td>
<td>0.111**</td>
</tr>
<tr>
<td>23. Friends smoke cigarettes</td>
<td>-0.062**</td>
<td>0.025</td>
<td>-0.009</td>
<td>0.015</td>
<td>-0.016</td>
<td>-0.080**</td>
</tr>
<tr>
<td>24. Friends use marijuana</td>
<td>-0.045*</td>
<td>-0.019</td>
<td>0.059**</td>
<td>-0.046*</td>
<td>0.011</td>
<td>-0.183**</td>
</tr>
<tr>
<td>25. Friends drink alcohol</td>
<td>0.022</td>
<td>0.082**</td>
<td>0.038</td>
<td>0.039</td>
<td>0.055*</td>
<td>-0.118**</td>
</tr>
<tr>
<td>26. Minor drugs</td>
<td>0.017</td>
<td>0.023</td>
<td>0.115**</td>
<td>0.090**</td>
<td>0.066**</td>
<td>-0.033</td>
</tr>
<tr>
<td>27. Skip/cut school</td>
<td>-0.013</td>
<td>0.037</td>
<td>0.161**</td>
<td>-0.083**</td>
<td>-0.023</td>
<td>-0.091**</td>
</tr>
<tr>
<td>28. Illicit drugs</td>
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<td>-0.021</td>
<td>0.143**</td>
<td>0.035</td>
<td>-0.006</td>
<td>-0.037</td>
</tr>
<tr>
<td>29. Non drug crimes</td>
<td>-0.057**</td>
<td>-0.059**</td>
<td>0.103**</td>
<td>-0.01</td>
<td>-0.027</td>
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</table>

Table 4: Correlation Matrix (Continued)
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<tr>
<th></th>
<th>7</th>
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<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
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<tbody>
<tr>
<td>7. Religion importance</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8. Religious preference</td>
<td>.253*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. High school type</td>
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<td>-.029</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>10. Grades</td>
<td>.158*</td>
<td>.073**</td>
<td>-.312**</td>
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<td>11. School publications</td>
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<td>-.004</td>
<td>-.079**</td>
<td>.134**</td>
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</tr>
<tr>
<td>12. School arts</td>
<td>.085**</td>
<td>.051*</td>
<td>-.118**</td>
<td>.152**</td>
<td>.166**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13. School sports</td>
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<td>.053*</td>
<td>-.194**</td>
<td>.182**</td>
<td>.187**</td>
<td>.051*</td>
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</tr>
<tr>
<td>14. Eat breakfast</td>
<td>.116**</td>
<td>0.022</td>
<td>-.113**</td>
<td>.235**</td>
<td>.068**</td>
<td>.072**</td>
<td>.161**</td>
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<tr>
<td>15. Eat vegetables</td>
<td>.078**</td>
<td>-.016</td>
<td>-.159**</td>
<td>.181**</td>
<td>.073**</td>
<td>.140**</td>
<td>.120**</td>
</tr>
<tr>
<td>16. Eat fruit</td>
<td>.084**</td>
<td>-.026</td>
<td>-.162**</td>
<td>.161**</td>
<td>.065**</td>
<td>.147**</td>
<td>.163**</td>
</tr>
<tr>
<td>17. Someone robbed you</td>
<td>-.02</td>
<td>-.037</td>
<td>.058**</td>
<td>-.096**</td>
<td>.028</td>
<td>-.002</td>
<td>.052*</td>
</tr>
<tr>
<td>18. Someone threatened</td>
<td>-.02</td>
<td>-.02</td>
<td>.096**</td>
<td>-.138**</td>
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Table 4: Continued

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<td>.122**</td>
<td>.066**</td>
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*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
A correlation matrix was also generated and presented in Table 4. The correlations show that there are significant and moderate correlations among some of the dimensions of the risk and protective factors. For example, the religiosity items were significant and had correlations ranging from $r=.248 \ p<.01$ to $r=.649 \ p< .01$. For the healthy diet dimension all of the correlations between the three items are significant and range from $r=.395 \ p< .01$ to $r=.685 \ p<.01$. For the victimization and school preference items, the correlations were also significant (except for one item among the school preference indicators), but the strength of the correlations were lower. This was also the case for the delinquency construct. The correlations varied from $r=.262 \ p< .01$ to $r=.406 \ p<.01$ and were all significant. Correlations among the association with substance using peers construct and self esteem construct were higher. For association with substance using peers correlations went from $r=.546 \ p<.01$ to $r=.649 \ p< .01$ and were significant. Correlations among self esteem items ranged from $r=.429 \ p< .01$ to $r=.714 \ p <.01$ and were significant. Correlations between these latent constructs are low, with most of them being below $r=.285 \ p <.05$.

It appears that there is a relationship between religiosity and delinquency. For example, the correlation between the importance of religion in one’s life and the minor delinquency substance use scale is $r= -.106 \ p <.01$. This correlation is weak, but suggests, in the support of literature, that there is tentatively an inverse relationship between religiosity and delinquency. To further explore this relationship, analysis of variance or ANOVA and t tests were run. ANOVA is used to “examine differences on a scale dependent variable between two or more groups comprising the levels of one independent variable or factor” (Leech, Barret, & Morgan, 2008, p. 134, italics in original). T tests
also examine whether the means between two variables are significantly different in the population, but is appropriate when comparing a dependent variable to an independent variable with fewer than two groups (Moore & McCabe, 2006).

ANOVA results for the key independent variable, religiosity, and several sociodemographic variables and the dependent variables, delinquency, are shown in Table 5. For the religiosity variables, there is not a significant difference between religious attendance and minor drugs, illicit drugs, or serious crimes. There is a significant difference between religious attendance and skipping/cutting school. Those who report never attending religious services have higher rates of skipping/cutting school than those who attend one to two times a month or weekly or more. There is not a significant difference between religious importance and illicit drugs or serious crimes. Regarding minor drugs, youth who reported religion as not being important had higher rates of use than those who rated religion as pretty or very important. Those who reported religion as pretty important had higher rates of use than those who reported religion as very important. For skipping/cutting school, the same can be seen. Youth reporting that religion is not important or has little importance had higher rates of skipping/cutting school than those who said it was pretty or very important. Religious preference was significantly different for all of the delinquency variables. It also appears that religious preference is more important in explaining delinquency than attendance and importance since the F value is so much larger than the other two. The SEM analyses will further investigate the relationship between religiosity and delinquency as well as what mediates the relationship.
Regarding the sociodemographic variables (see Table 5), gender was only significant for illicit drug use. Males and females have significant differences in participation in non drug crimes, but not with minor or illicit drug use or skipping school or cutting class. Males had higher rates of committing serious crimes than females. Race was significant across all of the delinquency variables as was urbanicity. Regarding race, Whites had higher rates of minor and serious drug use than African Americans and Hispanics. Whites also had higher rates of skipping/cutting school than African Americans, but African Americans had higher rates of serious crime than Whites and Hispanics. Furthermore, there also only appear to be differences in delinquency regarding mother’s level of education for minor drug use and skipping school and cutting classes, but not serious delinquency. This is also the case for the presence of a father in respondents’ households. Differences in delinquency based on the level or urbanicity where participants grew up is significant with all types of delinquency.
ANOVA tests also reveal how risk and protective factors may impact delinquency in SEM analyses. Based on ANOVA analyses, there does not appear to be a significant difference between the delinquency variables and the majority of the school activities and health items. There were significant differences between the delinquency variables and victimization items. Even though there were not always significant differences between delinquency and some of the risk and protective factor domains, the domains will be included in the model because they have been empirically identified as being correlated with reduced delinquency.

This section will also discuss the relationship between sociodemographic variables and religiosity and delinquency (Tables 6-8). For these analyses, cross tabs and chi square tests were done. This method is an appropriate way of examining whether differences between categorical variables are significant in the population (Moore & McCabe, 2005). Results indicate that attending religious services and religious preferences is not significantly different for males and females, but importance of religion is. For race, there are insignificant differences among racial groups regarding religious service attendance, but there are significant differences regarding importance of religion and religious preference. Interestingly, there is also a significant difference in religious service participation and religious preference based on whether there is a father in respondents’ households, but not religious importance. These preliminary results are starting to paint a picture of religiosity and adolescents.
<table>
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**Table 6: Chi square values for religious service attendance and key sociodemographic variables.***p<.05

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**Table 7: Chi square values for religious importance and key sociodemographic variables.***p<.05
Finally, there is an important note about missing data. The religiosity items measuring attendance of religious services and importance of religion in one’s life were systematically removed for the Western region of the sample. MTF did this to further protect the identity of participants. This means that for those two items, 25% of the data is missing. The rest of the data has missing values for between 5% and 10% of the cases. MTF assigns missing cases the values of -9 and a syntax command told Mplus to treat -9 values as missing. In using the WLSMV estimator, Mplus handles missing data in a similar fashion to pairwise deletion (Muthén & Muthén, 1998-2010).

### 4.2 Measurement Model for SEM Analysis

Following the preliminary testing of the variables, more sophisticated tests of their relationship is done. The first stage of the SEM process is creating the measurement model, which is the same as running confirmatory factor analyses (CFA) for the latent
constructs of interest. For all analyses creating the measurement, structural, and full SEM models, Mplus output reports a summary of analysis, including information on how many observations are used in the test, how many dependent and independent variables there are, and what estimator was used. Mplus considers indicator variables to be dependent variables (“Introduction to Mplus”). Following that is the summary of the data in the form of a covariance coverage table and count for categorical variables. The covariance coverage table provides information on the missing values, such as what percentages of values are available for each variable (“Introduction to Mplus”).

Then comes tests of model fit and model results including parameter estimates, factor variances, residual variances, and R square. Regarding the model fit, it is important to note that using the WLSMV estimator impacts how to make comparisons between different chi square values generated by an original and then alternative model. Discerning differences in chi square values can only be done using a two step process involving nesting a more restrictive model in a less restrictive one (this will be discussed in more detail later in the chapter). Additionally, confidence intervals for RMSEA are not given in Mplus when using categorical indicators (“Mplus discussion,” 2008). The factor variance is the “sample variability or dispersion of the factor; that is, the extent to which sample participants’ relative standing on the latent dimension is similar or different” (Brown, 2006, p. 53). The residual, also called unique, variance describes the variance in the parameter that is not explained by the latent construct (Brown, 2006). The R square section reports the amount of variance in an indicator variable that is accounted for by the latent factor (Brown, 2006). It is important to mention that Mplus sets the first
factor loading for each latent factor equal to one in analyses. This helps avoid model identification problems (Schumacker & Lomax, 2004).

After that is the standardized version of model results and modification indices. A residual matrix is not automatically included in the output, but can be requested. The residual matrix is the difference between $S$ and $\Sigma$ (Schumacker & Lomax, 2004). Researchers prefer residual values to be small (standardized residual values should not be larger than 1.96 or 2.58) (Schumacker & Lomax, 2004). In Mplus, standardized residuals can only be generated for continuous variables and a maximum likelihood estimator (Muthén & Muthén, 1998-2010). Most of the variables used in analyses are categorical and use a weighted squares estimator; therefore, standardized residuals are not reported. Modification indices are presented in a series of statements.

**4.2.1 Measurement model for the independent variables**

The first aspect of assembling the measurement model is doing CFA for the independent variables, which are religiosity, victimization, healthy diet, and educational environment. This step involves model specification. Model specification was done by consulting the literature as well as the results from the exploratory factor analysis (EFA). CFA is a tool that can confirm or make alterations to these suggestions based on the data. Figure 2 details the model specification for the independent and other risk and protective factor variables.
Figure 2: Measurement model for risk and protective factors (Continued)
Figure 2: Continued

Educational environment
- GPA
- Mother education
- High school type
- Music and arts
- Sports
- School publications

Healthy diet
- Eat breakfast
- East green vegetables
- Eat fruit
Next is model identification, estimation, and modification. For model identification, the number of free parameters has to be less than or equal to the number of values in $S$ (Schumacker & Lomax, 2005). Using the equation for determining the number of parameters in $S$, $p(p+1)/2$, it is found that the model is overidentified (Schumacker & Lomax, 2004). The analysis can proceed.

Results indicated that the model converged and terminated normally. For this model, Mplus used the WLSMV estimator. The goal for model estimation is to estimate parameters that “produce a predicted variance-covariance matrix (symbolized as $\Sigma$) that resembles the sample variance-covariance matrix (symbolized as $S$) as closely as possible” (Brown, 2006, p. 72). The goodness of fit indexes help researchers determine how closely $\Sigma$ is matching $S$ and fit of the parameters (Kim, 2003). The chi-square value is significant, but this is partially due to using a large data set (Kline, 2005). To further test how well the model fit the data other fit indexes were used. The CFI, TLI, and RMSEA scores are all within the range of what is considered good fit (Table 9).

| Goodness of fit statistics for CFA of independent variables |
|------------------|------------------|
| $X^2$            | 676.902          |
| df               | 113              |
| CFI              | 0.951            |
| TLI              | 0.941            |
| RMSEA            | 0.045            |

Table 9: Goodness of fit for independent variables
An examination of the standardized and unstandardized parameters estimated by the model was done (Table 10). Mplus reports the estimate, the standard error for the estimate, the estimate divided by the standard error, and the p value. If the estimate divided by the standard error is larger than ±1.96, then it is significant at the .05 level (Kim, 2003). This means that the parameter value is statistically not the same as zero. Also, there do not appear to be large standard errors. All of the standard errors are .037 or lower. The parameters are all significant. However, the strength of the parameters varied across the latent constructs.

For victimization, the questions about someone threatening you with a weapon or damaging your property had the highest factor loadings of .718 and .648, respectively. Next highest was whether something was stolen and that parameter value was .590. The remaining items measuring victimization had loadings of -.060 (urbanicity) and -.364 (father in household). The negative signs mean that as urbanicity decreases and as fathers are not in households, victimization increases. Around 50% of the variance in being threatened with a weapon and having property damaged is explained by the victimization factor. For urbanicity and father in household, .04% and 13.3% of the variance is accounted for by victimization. This indicates that urbanicity and father in household are not contributing much to the victimization construct; nevertheless, they are included in the model due to their theoretical importance and the CFA and EFA suggests that they are best placed with victimization.

For educational environment, there is less variability among the factor loadings, with most of them being between around .400 and .600. High school type and grades
have the highest loadings of -.577 and .618, respectively. The items asking about participation in school activities have loadings between .341 and .441. Lastly, mother’s education is .228. Similar to victimization, much of the variance in the factors in unexplained by the latent construct. Also similar to victimization, this is partially caused by the theoretical need to include, for example, mother’s education background. Including these sociodemographic variables is somewhat difficult, because they are not in and of themselves a latent construct. That is why this dissertation relied on EFA and CFA to select the best possible place to include them in the model. It is somewhat surprising that there were not higher correlations between school activities, grades, and high school type. The literature shows that they are intertwined. It is also possible that this lack of high correlations among the indicator variables is because several of the variables were measured in tandem in the data set and then variables asked at other places in the survey are added to them to try to form a construct. The questions about school activities are all asked together and then are added to the items about grades, high school type, and mother’s education, which are asked at different places. This also occurs with the victimization construct, but not with health and religion.

With the healthy diet dimension, there are higher factor loadings: eating fruit is .836, eating green vegetables is .837, and eating breakfast is .561. Possibly the higher loadings are due to the fact that these items all came from the same section of the data set and no sociodemographic items were added. It is still the case that several of the items are grouping together and one is not. It appears that eating fruit and green vegetables are more closely related than eating breakfast. Indeed, over 70% of the variance in both
eating fruit and vegetables is accounted for by health and only 31.5% of eating breakfast is.

This is also the case with the religiosity construct. Attending religious services and importance of religion have loadings of .841 and .886, respectively. Religious preference’s loading is .569. These three items all explicitly measure religion, but there is something about religious preference that is not being measured through this construct in the same way that religious service attendance and importance of religion is. The R square results show that 32.4% of the variance in religious preference is being captured, as opposed to almost 71% of religious service attendance and 78% of religious importance.

Mplus also reports correlations among victimization, educational environment, healthy diet, and religiosity. The correlations are significant, except for religiosity and victimization. The strongest correlation is between educational environment and healthy diet, which is .449. The residual covariance matrix does not suggest a significant concern. If the estimated covariance matrix matched the sample covariance matrix, the residuals would all equal zero. The fact that there are values for the residuals in the matrix shows that there is some degree of misfit between the estimated and sample covariance matrices (Kim, 2003). However, the residuals are not very large. The largest residual value is .147. Mplus made suggestions to improve the model fit, but given that model fit was already within an acceptable range and none of the modification indices seemed necessary to make based on theory, none were made to the model. Overall, the constructs do not
appear to be extremely strong, but they are within the range of good model fit. This will
be the measurement model for the risk and protective factors.

<table>
<thead>
<tr>
<th>Latent/Observed</th>
<th>Unstandardized Estimate</th>
<th>SE</th>
<th>Z</th>
<th>Standardized Estimate</th>
<th>SE</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victimization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had items worth more than $50 stolen</td>
<td>1</td>
<td>0</td>
<td>0.590*</td>
<td>0.030</td>
<td>19.955</td>
<td></td>
</tr>
<tr>
<td>Was threatened with weapon</td>
<td>1.217*</td>
<td>0.087</td>
<td>14.014</td>
<td>0.718*</td>
<td>0.033</td>
<td>21.623</td>
</tr>
<tr>
<td>Had property damaged</td>
<td>1.098*</td>
<td>0.079</td>
<td>13.913</td>
<td>0.648*</td>
<td>0.029</td>
<td>22.155</td>
</tr>
<tr>
<td>Urbanicity</td>
<td>-0.101*</td>
<td>0.048</td>
<td>-2.117</td>
<td>-0.060*</td>
<td>0.028</td>
<td>-2.133</td>
</tr>
<tr>
<td>Father in household</td>
<td>-0.617*</td>
<td>0.069</td>
<td>-8.962</td>
<td>-0.364*</td>
<td>0.037</td>
<td>-9.924</td>
</tr>
<tr>
<td>Educational env.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades past year</td>
<td>1</td>
<td>0</td>
<td>0.618*</td>
<td>0.026</td>
<td>24.202</td>
<td></td>
</tr>
<tr>
<td>School publications</td>
<td>0.552*</td>
<td>0.064</td>
<td>8.623</td>
<td>0.341*</td>
<td>0.036</td>
<td>9.459</td>
</tr>
<tr>
<td>Performing arts</td>
<td>0.587*</td>
<td>0.059</td>
<td>9.968</td>
<td>0.363*</td>
<td>0.032</td>
<td>11.335</td>
</tr>
<tr>
<td>Athletic teams</td>
<td>0.711*</td>
<td>0.058</td>
<td>12.160</td>
<td>-0.577*</td>
<td>0.026</td>
<td>-21.819</td>
</tr>
<tr>
<td>High school type</td>
<td>-0.932*</td>
<td>0.064</td>
<td>-14.594</td>
<td>0.440*</td>
<td>0.030</td>
<td>14.700</td>
</tr>
<tr>
<td>Mother education</td>
<td>0.369*</td>
<td>0.043</td>
<td>8.540</td>
<td>0.228*</td>
<td>0.025</td>
<td>9.246</td>
</tr>
<tr>
<td>Healthy diet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eat breakfast</td>
<td>1</td>
<td>0</td>
<td>0.561*</td>
<td>0.017</td>
<td>32.396</td>
<td></td>
</tr>
<tr>
<td>Eat fruit</td>
<td>1.538*</td>
<td>0.053</td>
<td>29.031</td>
<td>0.863*</td>
<td>0.014</td>
<td>60.594</td>
</tr>
<tr>
<td>Eat vegetables</td>
<td>1.492*</td>
<td>0.049</td>
<td>30.211</td>
<td>0.837*</td>
<td>0.014</td>
<td>59.762</td>
</tr>
<tr>
<td>Religious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service attendance</td>
<td>1</td>
<td>0</td>
<td>0.841*</td>
<td>0.018</td>
<td>47.908</td>
<td></td>
</tr>
<tr>
<td>Importance</td>
<td>1.053*</td>
<td>0.037</td>
<td>28.150</td>
<td>0.886*</td>
<td>0.017</td>
<td>52.651</td>
</tr>
<tr>
<td>Religious preference</td>
<td>0.677*</td>
<td>0.026</td>
<td>26.185</td>
<td>0.569*</td>
<td>0.020</td>
<td>27.854</td>
</tr>
</tbody>
</table>

Table 10: Risk and protective factor measurement model unstandardized and standardized parameter estimates and test statistic *p<.05
4.2.2 Measurement model for mediating variables

A CFA was done on the mediating variables (see Figure 3). The model specified that association with substance using peers and self esteem each contain 3 indicators. These items were selected based on the EFA as well as consulting the correlation matrix and removing one item from association with substance using peers and self esteem that were highly correlated with another and also had the lowest factor loading. The model is overidentified.

![Figure 3: Measurement model for mediating variables](attachment:image.png)
Next is model estimation. Again, the model terminated normally and there was convergence and WLSMV estimator was used. The model fit indexes reveal that the model is a good fit (Table 11). All of the parameters are significant and standard errors are not large (Table 12). The strength of the factor loadings for peers is high and ranges from .757 to .896. The R squared values indicate that the peers factor is explaining the majority of variation in the items: amount of friends who drink alcohol has 57.2% of its variance explained and 62.4% of friends smoking cigarettes and 80.3% percent of the variance in friends using marijuana is explained by the peers factor. This is similar for the self esteem factor. The loadings range from .637 to .967. Only the item that states that my life is not useful has less than 50% of its variance explained by the factor; the other two items have between 66% and 93% of their variance explained. The residual values are small, but they are not zero, meaning there is some degree of model misfit. The modification indices do not reveal any modifications that would be theoretically necessary. The fit of the overall model and the parameters is good.

<table>
<thead>
<tr>
<th>Goodness of fit statistics for CFA of mediating variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>$X^2$</td>
</tr>
<tr>
<td>df</td>
</tr>
<tr>
<td>CFI</td>
</tr>
<tr>
<td>TLI</td>
</tr>
<tr>
<td>RMSEA</td>
</tr>
</tbody>
</table>

Table 11: Goodness of fit statistics for CFA of mediating variables
Table 12: Mediating variables measurement model unstandardized and standardized parameter estimates and test statistic *p<.05

<table>
<thead>
<tr>
<th>Latent/Observed</th>
<th>Unstandardized Estimate</th>
<th>SE</th>
<th>Z</th>
<th>Standardized Estimate</th>
<th>SE</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends smoke cigarette</td>
<td>1*</td>
<td>0</td>
<td></td>
<td>0.790*</td>
<td>.012</td>
<td>64.448</td>
</tr>
<tr>
<td>Friends use marijuana</td>
<td>1.134*</td>
<td>.024</td>
<td>47.534</td>
<td>0.896*</td>
<td>.010</td>
<td>89.759</td>
</tr>
<tr>
<td>Friends drink alcohol</td>
<td>0.958*</td>
<td>.020</td>
<td>48.083</td>
<td>0.757*</td>
<td>.013</td>
<td>59.919</td>
</tr>
<tr>
<td><strong>Self esteem</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life isn’t useful</td>
<td>1*</td>
<td>0</td>
<td></td>
<td>0.637*</td>
<td>.018</td>
<td>35.274</td>
</tr>
<tr>
<td>Satisfied with myself</td>
<td>1.519*</td>
<td>.053</td>
<td>28.459</td>
<td>0.967*</td>
<td>.013</td>
<td>73.898</td>
</tr>
<tr>
<td>Positive attitude toward self</td>
<td>1.282*</td>
<td>.033</td>
<td>38.516</td>
<td>0.817*</td>
<td>.014</td>
<td>59.805</td>
</tr>
</tbody>
</table>

4.2.3 Measurement model for dependent variables

A CFA was done for the delinquency variables (see Figure 4). Initially, the model was specified to include two constructs; one defining minor delinquency (minor drug use and skipping and cutting school) and the other defining serious delinquency (illicit drug use and non drug related crime).
Regarding model identification, the model is overidentified. The model terminated normally and convergence did occur. Because there are no categorical variables in this model, the estimator is MLMV, which is appropriate for continuous variables and also robust to non normality (Muthén & Muthén, 1998-2010). MLMV creates “maximum likelihood parameter estimates with standard errors and a mean- and variance-adjusted chi-square test statistic that are robust to non-normality” (Muthén & Muthén, 1998-2010, p.533). To use the MLMV estimator, it must be specified that missing cases should be addressed with listwise deletion. The model converged and terminated normally; however, there was a warning that the matrix was not positive definite. The output was inspected and minor and serious delinquency had a standardized correlation of 1.019. This suggests that they are measuring the same construct. Brown
(2006) writes that this is often the case for correlations are around .80 or .85. Mplus states that high correlations among variables is one cause of the matrix not being positive definite.

Another model was generated to explore whether the matrix would be positive definite by merging the two delinquency constructs into one construct. Again, the MLMV estimator is used along with listwise deletion for missing values. The results indicate model convergence, normal termination, and no warnings or error messages. Chi square is insignificant and CFI, TLI, and RMSEA are in the range of good model fit (Table 12). The standard errors are lower than in the previous model and all of the parameters are significant (Table 13). The values of the parameters vary from .492 to .602. The items measuring minor drug use, skipping school and cutting class, and illicit drug use have around 30% or 40% of their variances that is accounted for by the delinquency factor; however crimes has around 50% of its variance that is explained. Again, the residual values for these items are small, but indicate there the estimated covariance matrix does not perfectly match the sample one. This will be the CFA of the delinquency variables that will be used in the SEM model.

| Goodness of fit statistics for CFA delinquency |
|-----------------|------|
| \( \chi^2 \)  | 0.366 |
| df              | 2    |
| CFI             | 1.000 |
| TLI             | 1.015 |
| RMSEA           | 0.000 |

Table 13: Goodness of fit statistics for CFA for delinquency variables
<table>
<thead>
<tr>
<th>Latent/Observed Estimate</th>
<th>Unstandardized Estimate</th>
<th>SE</th>
<th>Z</th>
<th>Standardized Estimate</th>
<th>SE</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delinquency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skip/cut school</td>
<td>1</td>
<td>0</td>
<td></td>
<td>0.492*</td>
<td>.038</td>
<td>13.083</td>
</tr>
<tr>
<td>Minor drugs</td>
<td>1.047*</td>
<td>.107</td>
<td>9.764</td>
<td>0.544*</td>
<td>.038</td>
<td>14.153</td>
</tr>
<tr>
<td>Illicit drugs</td>
<td>1.655*</td>
<td>.162</td>
<td>10.218</td>
<td>0.739*</td>
<td>.040</td>
<td>18.516</td>
</tr>
<tr>
<td>Crimes</td>
<td>1.066*</td>
<td>.132</td>
<td>8.065</td>
<td>0.602*</td>
<td>.045</td>
<td>13.300</td>
</tr>
</tbody>
</table>

Table 14: Delinquency variables measurement model unstandardized and standardized parameter estimates and test statistic *p<.05

4.2.4 Measurement model for all constructs

Lastly, a CFA was done on all of the constructs. This CFA included the risk and protective factors, mediating factors, and delinquency. The model is specified to include the following constructs: victimization, health, school, religiosity, peers, self esteem, and delinquency. Figures 2–4 detail the observed variables for each construct. The only change made for this CFA is the suggestion Mplus gave of including delinquency as one construct that is measured by minor drugs, skip/cut school, illicit drugs, and serious crimes.

In terms of identification, the model is overidentified. The model terminated normally and the model converged. Mplus used the WLSMV estimator. The model fit indexes reveal that the model is a good fit (Table 15). All of the parameters are significant, except for urbanicity, and standard errors are not large (Table 16). Similar patterns among the factor loadings for the observed variables can be seen that have already been discussed in the previous sections. For example, it still appears that religious preference is different from religious attendance and importance. Additionally, the sociodemographic variables that were included with the victimization construct do not have strong factor loadings, as was already mentioned. The modification indices do not
reveal any modifications that would be theoretically necessary. The fit of the overall model and the parameters is good. This is the measurement model that will be added to path analysis to create the structural equation model.

| Goodness of fit statistics for CFA all constructs |
|----------------|--------|
| $X^2$          | 1330.767 |
| df             | 303     |
| CFI            | 0.949   |
| TLI            | 0.941   |
| RMSEA          | 0.037   |

Table 15: Goodness of fit statistics for CFA of all constructs
<table>
<thead>
<tr>
<th>Latent/Observed</th>
<th>Unstandardized Estimate</th>
<th>SE</th>
<th>Z</th>
<th>Standardized Estimate</th>
<th>SE</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victimization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had items worth more than $50 stolen</td>
<td>1</td>
<td>0</td>
<td>0.576*</td>
<td>.029</td>
<td>20.100</td>
<td></td>
</tr>
<tr>
<td>Was threatened with weapon</td>
<td>1.442*</td>
<td>.094</td>
<td>15.291</td>
<td>0.830*</td>
<td>.033</td>
<td>25.270</td>
</tr>
<tr>
<td>Had property damaged</td>
<td>1.005*</td>
<td>.066</td>
<td>15.115</td>
<td>0.579*</td>
<td>.029</td>
<td>20.183</td>
</tr>
<tr>
<td>Urbanicity</td>
<td>-0.086</td>
<td>.053</td>
<td>-1.626</td>
<td>-0.050</td>
<td>.030</td>
<td>-1.638</td>
</tr>
<tr>
<td>Father in household</td>
<td>-0.579*</td>
<td>.074</td>
<td>-7.856</td>
<td>-0.333*</td>
<td>.040</td>
<td>-8.400</td>
</tr>
<tr>
<td>Educational env.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school type</td>
<td>1</td>
<td>0</td>
<td>0.646*</td>
<td>.030</td>
<td>21.655</td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>-0.846*</td>
<td>.067</td>
<td>-12.589</td>
<td>-0.547*</td>
<td>.030</td>
<td>-18.480</td>
</tr>
<tr>
<td>Publications</td>
<td>0.508*</td>
<td>.072</td>
<td>7.086</td>
<td>0.328*</td>
<td>.043</td>
<td>7.661</td>
</tr>
<tr>
<td>Performing arts</td>
<td>0.527*</td>
<td>.063</td>
<td>8.319</td>
<td>0.341*</td>
<td>.037</td>
<td>9.290</td>
</tr>
<tr>
<td>Athletic teams</td>
<td>0.656*</td>
<td>.064</td>
<td>10.253</td>
<td>0.424*</td>
<td>.035</td>
<td>12.065</td>
</tr>
<tr>
<td>Mother education</td>
<td>0.297*</td>
<td>.048</td>
<td>6.223</td>
<td>0.192*</td>
<td>.029</td>
<td>6.597</td>
</tr>
<tr>
<td>Healthy diet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eat breakfast</td>
<td>1</td>
<td>0</td>
<td>0.573*</td>
<td>.020</td>
<td>28.943</td>
<td></td>
</tr>
<tr>
<td>Eat fruit</td>
<td>1.488*</td>
<td>.060</td>
<td>24.938</td>
<td>0.852*</td>
<td>.018</td>
<td>47.902</td>
</tr>
<tr>
<td>Eat vegetables</td>
<td>1.450*</td>
<td>.056</td>
<td>26.071</td>
<td>0.830*</td>
<td>.018</td>
<td>46.548</td>
</tr>
<tr>
<td>Religiosity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendance</td>
<td>1</td>
<td>0</td>
<td>0.855*</td>
<td>.020</td>
<td>42.283</td>
<td></td>
</tr>
<tr>
<td>Importance</td>
<td>1.020*</td>
<td>.043</td>
<td>23.747</td>
<td>0.872*</td>
<td>.021</td>
<td>42.479</td>
</tr>
<tr>
<td>Preference</td>
<td>0.638*</td>
<td>.032</td>
<td>19.929</td>
<td>0.545*</td>
<td>.025</td>
<td>21.646</td>
</tr>
<tr>
<td>Self esteem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life isn’t useful</td>
<td>1</td>
<td>0</td>
<td>0.663*</td>
<td>.017</td>
<td>38.272</td>
<td></td>
</tr>
<tr>
<td>Satisfied with self</td>
<td>1.437*</td>
<td>.047</td>
<td>30.514</td>
<td>0.952*</td>
<td>.014</td>
<td>67.787</td>
</tr>
<tr>
<td>Positive attitude toward self</td>
<td>1.238*</td>
<td>.032</td>
<td>38.278</td>
<td>0.820*</td>
<td>.014</td>
<td>58.284</td>
</tr>
<tr>
<td>Peers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends smoke cigarette</td>
<td>1</td>
<td>0</td>
<td>0.794*</td>
<td>.012</td>
<td>65.278</td>
<td></td>
</tr>
<tr>
<td>Friends use marijuana</td>
<td>1.131*</td>
<td>.023</td>
<td>48.297</td>
<td>0.898*</td>
<td>.010</td>
<td>88.546</td>
</tr>
<tr>
<td>Friends drink alcohol</td>
<td>0.943*</td>
<td>.021</td>
<td>45.188</td>
<td>0.749*</td>
<td>.013</td>
<td>56.422</td>
</tr>
<tr>
<td>Delinquency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skip/cut school</td>
<td>1</td>
<td>0</td>
<td>0.499*</td>
<td>.022</td>
<td>22.195</td>
<td></td>
</tr>
<tr>
<td>Minor drugs</td>
<td>0.999*</td>
<td>.073</td>
<td>13.667</td>
<td>0.619*</td>
<td>.020</td>
<td>31.610</td>
</tr>
<tr>
<td>Illicit drugs</td>
<td>1.242*</td>
<td>.083</td>
<td>14.943</td>
<td>0.570*</td>
<td>.014</td>
<td>41.626</td>
</tr>
<tr>
<td>Crimes</td>
<td>0.792*</td>
<td>.050</td>
<td>15.718</td>
<td>0.438*</td>
<td>.012</td>
<td>36.180</td>
</tr>
</tbody>
</table>

Table 16: Measurement model unstandardized and standardized parameter estimates and test statistic *p<.05
4.3 Structural model for SEM analysis

The second part of preparation for the SEM model is constructing the structural model or path analysis. In this research project, the structural model is not overly complicated. Based on the literature it is hypothesized that the independent variables all directly and non reciprocally impact the delinquency variable. This is the foundation of the risk and resilience framework that is being tested with this structural model. The literature did not make specific suggestions about paths between the independent variables. While this would be an interesting research project that is not the direction of this dissertation. This structural model will be tested with the measurement model to create a complete SEM model.

The model is overidentified. Next, the model is estimated. WLSMV is used as an estimator, given the categorical indicators. The model converged and terminated normally. Model fit indexes are in the acceptable range, although the CFI is a somewhat low (.930). Perhaps this is due to the fact that CFI takes into consideration how many indicators are used in a model. All of the parameters are significant and the standard errors are low.

In terms of the structural aspect of the model, delinquency is significantly related to the four latent independent variable constructs. Religiosity and healthy diet are negatively related to delinquency (z= -4.543 p< .05, z= -3.222 p< .05, respectively), which makes sense given the literature. The more religious and healthier the respondents are, the lower their delinquency. Victimization is positively related to delinquency (z= 15.609 p< .05), which also resonates with the literature.
The slightly low CFI index suggests that modification indices could have helpful information for improving model fit. Mplus suggested correlating eating fruit and eating vegetables. This seems feasible from a theoretical standpoint. Making this modification increase the CFI to .936, chi square decreased, TLI increased, and RMSEA decreased, which suggests overall improvements to the model (Table 17). All of the parameters are significant and there do not appear to be large residual values. This modification changed the structural component of the model. Before, all of the independent variables were significantly related to the delinquency variable. Now, the educational environment construct is not significantly related to the delinquency variable. The strongest correlation is between delinquency and victimization, which is .740. The standardized parameter value for delinquency and religiosity is -.138 (Table 18). Examination of the model with the mediators will provide more insight.

<table>
<thead>
<tr>
<th>Goodness of fit statistics for SEM model</th>
<th>Original model</th>
<th>Revised Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \chi^2 )</td>
<td>1130.814</td>
<td>1045.133</td>
</tr>
<tr>
<td>df</td>
<td>179</td>
<td>178</td>
</tr>
<tr>
<td>CFI</td>
<td>0.930</td>
<td>0.936</td>
</tr>
<tr>
<td>TLI</td>
<td>0.918</td>
<td>0.925</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.047</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Table 17: Goodness of fit statistics for SEM model
Figure 5: Path model of risk and protective factors and delinquency with unstandardized path coefficients. *p<.05.

<table>
<thead>
<tr>
<th>Path model coefficients of risk and protective factors</th>
<th>Unstandardized</th>
<th>Standardized</th>
<th>Significant Standardized Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy diet</td>
<td>-.175*</td>
<td>-.144*</td>
<td>-3.222*</td>
</tr>
<tr>
<td>Educational environment</td>
<td>.079</td>
<td>.051</td>
<td></td>
</tr>
<tr>
<td>Victimization</td>
<td>.740*</td>
<td>.492*</td>
<td>15.609*</td>
</tr>
<tr>
<td>Religiosity</td>
<td>-.144*</td>
<td>-.138*</td>
<td>-4.543*</td>
</tr>
</tbody>
</table>

Table 18: Path model coefficients of risk and protective factors and delinquency, unstandardized and standardized *p<.05
<table>
<thead>
<tr>
<th>Latent/Observed</th>
<th>Unstandardized Estimate</th>
<th>SE</th>
<th>Z</th>
<th>Standardized Estimate</th>
<th>SE</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Victimization</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had items worth more than $50 stolen</td>
<td>1</td>
<td>0</td>
<td>0.596*</td>
<td>0.023</td>
<td>25.407</td>
<td></td>
</tr>
<tr>
<td>Was threatened with weapon</td>
<td>1.289*</td>
<td>.069</td>
<td>18.635</td>
<td>0.768*</td>
<td>.027</td>
<td>28.017</td>
</tr>
<tr>
<td>Had property damaged</td>
<td>1.019*</td>
<td>.052</td>
<td>19.728</td>
<td>0.607*</td>
<td>.024</td>
<td>25.584</td>
</tr>
<tr>
<td>Urbanicity</td>
<td>-0.102 *</td>
<td>.046</td>
<td>-2.220</td>
<td>-0.061*</td>
<td>.027</td>
<td>-2.231</td>
</tr>
<tr>
<td>Father in household</td>
<td>-0.577*</td>
<td>.061</td>
<td>-9.520</td>
<td>-0.344*</td>
<td>.035</td>
<td>-9.908</td>
</tr>
<tr>
<td><strong>Educational env</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school type</td>
<td>1</td>
<td>0</td>
<td>0.573*</td>
<td>0.026</td>
<td>21.918</td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>-1.127*</td>
<td>.076</td>
<td>-14.771</td>
<td>-0.645*</td>
<td>.026</td>
<td>-24.942</td>
</tr>
<tr>
<td>Publications</td>
<td>-0.578*</td>
<td>.070</td>
<td>-8.251</td>
<td>-0.331*</td>
<td>.037</td>
<td>-8.981</td>
</tr>
<tr>
<td>Performing arts</td>
<td>-0.625*</td>
<td>.064</td>
<td>-9.807</td>
<td>-0.358*</td>
<td>.033</td>
<td>-10.978</td>
</tr>
<tr>
<td>Athletic teams</td>
<td>-0.723*</td>
<td>.063</td>
<td>-11.485</td>
<td>-0.414*</td>
<td>.030</td>
<td>-13.708</td>
</tr>
<tr>
<td>Mother education</td>
<td>-0.390*</td>
<td>.048</td>
<td>-8.200</td>
<td>-0.223*</td>
<td>.025</td>
<td>-8.975</td>
</tr>
<tr>
<td><strong>Healthy diet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eat breakfast</td>
<td>1</td>
<td>0</td>
<td>0.734*</td>
<td>0.029</td>
<td>25.649</td>
<td></td>
</tr>
<tr>
<td>Eat fruit</td>
<td>0.850*</td>
<td>.062</td>
<td>13.664</td>
<td>0.624*</td>
<td>.027</td>
<td>22.951</td>
</tr>
<tr>
<td>Eat vegetables</td>
<td>0.850*</td>
<td>.062</td>
<td>13.664</td>
<td>0.598*</td>
<td>.028</td>
<td>21.685</td>
</tr>
<tr>
<td><strong>Religiosity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendance</td>
<td>1</td>
<td>0</td>
<td>0.855*</td>
<td>0.018</td>
<td>48.748</td>
<td></td>
</tr>
<tr>
<td>Importance</td>
<td>1.025*</td>
<td>.036</td>
<td>28.160</td>
<td>0.876*</td>
<td>.017</td>
<td>51.592</td>
</tr>
<tr>
<td>Preference</td>
<td>0.658*</td>
<td>.026</td>
<td>24.873</td>
<td>0.562*</td>
<td>.021</td>
<td>26.642</td>
</tr>
<tr>
<td><strong>Delinquency</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skip/cut school</td>
<td>1</td>
<td>0</td>
<td>0.511*</td>
<td>0.022</td>
<td>23.558</td>
<td></td>
</tr>
<tr>
<td>Minor drugs</td>
<td>0.831*</td>
<td>.059</td>
<td>14.104</td>
<td>0.531*</td>
<td>.020</td>
<td>26.906</td>
</tr>
<tr>
<td>Illicit drugs</td>
<td>1.146*</td>
<td>.066</td>
<td>17.478</td>
<td>0.549*</td>
<td>.013</td>
<td>41.781</td>
</tr>
<tr>
<td>Crimes</td>
<td>1.030*</td>
<td>.065</td>
<td>15.850</td>
<td>0.567*</td>
<td>.013</td>
<td>44.138</td>
</tr>
</tbody>
</table>

Table 19: SEM measurement model unstandardized and standardized parameter estimates and test statistic *p<.05
4.4 Full SEM model with mediators

Now that the measurement and structural models are complete, the full SEM model with association with substance using peers and self esteem can be tested. This model is specified by adding additional paths to the current structural model and keeping the same constructs for the independent and dependent variables (Figure 2). Victimization, healthy diet, and educational environment still have a direct path to delinquency. Religiosity has a direct path to association with substance using peers, hereafter just referred to as peers, and then there is a direct path from peers to delinquency. Also from religiosity there is a direct path to self esteem and from self esteem there is a direct path to delinquency. Lastly, there is an indirect path from religiosity to delinquency that is tested.

Next is model identification, estimation, and modification. The model is overidentified. Regarding estimation, the model converged and termination normally. The WLSV estimator was used. The model fit reveals an acceptable model (Table 20). The CFI is once again slightly low (.936). The parameters are significant and the standard errors are low (Table 21). Because the CFI is slightly below the generally aimed for value of .950, the modification indices will be consulted to see if there are suggestions that make sense based on the literature. One theoretically sound modification Mplus offers is to correlate crimes and one of the victimization items that asks: has someone threatened you with a weapon, but not actually injured you? Making this modification subtly changes model fit: chi square decreased, CFI increased to .940, TLI slightly increased, and RMSEA went from .41 to .40. Residual values are small.
Figure 6: SEM with mediating variables and unstandardized path coefficients and standard errors. *p<.05

Table 20: Goodness of fit statistics for SEM model with mediating variables

<table>
<thead>
<tr>
<th>Goodness of fit statistics for SEM model with mediating variables</th>
<th>Original model</th>
<th>Revised Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>$X^2$</td>
<td>1593.196</td>
<td>1520.975</td>
</tr>
<tr>
<td>df</td>
<td>311</td>
<td>310</td>
</tr>
<tr>
<td>CFI</td>
<td>0.936</td>
<td>0.940</td>
</tr>
<tr>
<td>TLI</td>
<td>0.918</td>
<td>0.932</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.041</td>
<td>0.040</td>
</tr>
<tr>
<td>Latent/Observed</td>
<td>Unstandardized Estimate</td>
<td>SE</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------</td>
<td>----</td>
</tr>
<tr>
<td>Victimization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Had items worth more than $50 stolen</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Was threatened with weapon</td>
<td>0.998*</td>
<td>0.070</td>
</tr>
<tr>
<td>Had property damaged</td>
<td>1.132*</td>
<td>.083</td>
</tr>
<tr>
<td>Urbanicity</td>
<td>-0.100*</td>
<td>.049</td>
</tr>
<tr>
<td>Father in household</td>
<td>-0.597*</td>
<td>.071</td>
</tr>
<tr>
<td>Educational env</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>High school type</td>
<td>-0.832*</td>
<td>.066</td>
</tr>
<tr>
<td>Publications</td>
<td>0.506*</td>
<td>.071</td>
</tr>
<tr>
<td>Performing arts</td>
<td>0.532*</td>
<td>.062</td>
</tr>
<tr>
<td>Athletic teams</td>
<td>0.636*</td>
<td>.063</td>
</tr>
<tr>
<td>Mother education</td>
<td>0.299*</td>
<td>.047</td>
</tr>
<tr>
<td>Healthy diet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eat breakfast</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Eat fruit</td>
<td>1.529*</td>
<td>.063</td>
</tr>
<tr>
<td>Eat vegetables</td>
<td>1.469*</td>
<td>.058</td>
</tr>
<tr>
<td>Religiosity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendance</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Importance</td>
<td>0.990*</td>
<td>.041</td>
</tr>
<tr>
<td>Preference</td>
<td>0.598*</td>
<td>.033</td>
</tr>
<tr>
<td>Self esteem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life isn’t useful</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Satisfied with self</td>
<td>1.448*</td>
<td>.049</td>
</tr>
<tr>
<td>Positive attitude toward self</td>
<td>1.257*</td>
<td>.032</td>
</tr>
<tr>
<td>Peers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friends smoke cigarette</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Friends use marijuana</td>
<td>1.128*</td>
<td>.023</td>
</tr>
<tr>
<td>Friends drink alcohol</td>
<td>0.950*</td>
<td>.020</td>
</tr>
<tr>
<td>Delinquency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skip/cut school</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Minor drugs</td>
<td>1.017*</td>
<td>.075</td>
</tr>
<tr>
<td>Illicit drugs</td>
<td>1.254*</td>
<td>.085</td>
</tr>
<tr>
<td>Crimes</td>
<td>0.724*</td>
<td>.046</td>
</tr>
</tbody>
</table>

Table 21: SEM with mediating variables measurement model unstandardized and standardized parameter estimates and test statistic *p<.05
Structurally, educational environment is negatively correlated with delinquency, which theoretically makes sense, but is not significant (see Table 22). It is close to being significant with a p value of .055. Healthy diet is not significantly related to delinquency. The path between victimization and delinquency is significant ($z=10.892 \ p< .05$). It is surprising that educational environment is not significant, given the fact that many acts of adolescent delinquency occur in the school environment, such as on the way to or from school, on school grounds, etc (Botvin, Griffin, & Nichols, 2006; Hahn et al., 2007). The literature did highlight a strong connection between victimization and future delinquency, making the significant relationship found in this analysis expected.

Regarding the mediating variables, the path from peers to delinquency is significant and strong ($z= 34.469 \ p< .05$). This confirms the importance of peers’ behavior in impacting adolescents’ behavior that is documented in the literature. The path from self esteem to delinquency is not significant, although it is negative, which is theoretically meaningful. With the presence of peers in the model, the strength of correlation between victimization and delinquency decreased to .404. The literature has noted the finding that adolescents with low self esteem are more likely to be delinquent, but perhaps this finding is overshadowed with peers in the model as well (Donnellan et al, 2005; Trzesniewski et al, 2006).

The paths from religiosity to peers and self esteem are significant and the path from peers to religiosity is negative ($z= -7.097 \ p< .05$), while the path from religiosity to self esteem is positive ($z= 8.406 \ p< .05$). This also aligns with the literature. It has been hypothesized that one way religiosity impacts adolescents is by providing them with
access social network comprised of adults and mentors, besides their parents, who supervise them and encourage them to be non delinquent (Smith, 2003). It would be expected for there to be an inverse relationship between peers and religiosity. Also, religiosity has been reported to increase adolescents’ mental health and sense of well being (Dew, Daniel, Armstrong, Goldston, Triplett, & Koenig, 2008; Regnerus, 2003; Rew & Wong, 2006). Self esteem is connected to both mental health and a sense of well being, which suggests that a positive significant relationship between religiosity and self esteem matches the literature. While this model does not completely explain how or why these variables interact, the results show that there is something about a decreased association with substance using peers that religious adolescents experience and that there is something related to higher self esteem that religious adolescents identity with.

<table>
<thead>
<tr>
<th>Path model coefficients of risk and protective factors and mediating variables</th>
<th>Unstandardized</th>
<th>Standardized</th>
<th>Significant standardized Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy diet</td>
<td>-0.117</td>
<td>-0.075</td>
<td></td>
</tr>
<tr>
<td>Educational env</td>
<td>-0.119</td>
<td>-0.089</td>
<td></td>
</tr>
<tr>
<td>Victimization</td>
<td>.0563*</td>
<td>0.404*</td>
<td>10.892*</td>
</tr>
<tr>
<td>Peers (to religiosity)</td>
<td>-.203*</td>
<td>-.217*</td>
<td>-7.097*</td>
</tr>
<tr>
<td>Self esteem (to religiosity)</td>
<td>.226*</td>
<td>.292*</td>
<td>8.406*</td>
</tr>
<tr>
<td>Peers (to delinquency)</td>
<td>.691*</td>
<td>.629*</td>
<td>34.469*</td>
</tr>
<tr>
<td>Self esteem (to delinquency)</td>
<td>-.036</td>
<td>-.027</td>
<td></td>
</tr>
</tbody>
</table>

Table 22: Path model coefficients of risk and protective factors to delinquency and religiosity, unstandardized and standardized *p<.05
The indirect path from religiosity to delinquency (through peers) is significant, but the indirect path from religiosity to delinquency (through self esteem) is not (Table 23). The indirect path from religiosity to delinquency through peers is -.140, which is only a slight decrease from the correlation of religiosity to delinquency in the model without the mediators. Therefore, the mediating hypothesis is not supported. This suggests that while peers and self esteem are related to adolescent religiosity in the ways highlighted by the literature, they do not fully account for the weak to moderate correlation between religiosity and delinquency. This helps to inform understanding about adolescent’s experience of religiosity.

<table>
<thead>
<tr>
<th>Indirect path model coefficients for religiosity and delinquency</th>
<th>Unstandardized</th>
<th>Standardized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religiosity (through peers)</td>
<td>-0.140*</td>
<td>-0.144*</td>
</tr>
<tr>
<td>Religiosity (through self esteem)</td>
<td>-0.008</td>
<td>-.008</td>
</tr>
</tbody>
</table>

Table 23: Indirect path model coefficients for religiosity and delinquency, unstandardized and standardized *p<.05

4.5 Secondary analysis: Multiple group analysis with full SEM model

This model has the same specification of the previous model. Nothing is changed to the measurement or structural components. Statements are added to the syntax telling Mplus to run a multiple group analysis using the WLMSV estimator and chi square difference test. This is first done for males and females. This occurs in two steps to test for measurement invariance. In the first model, commands are entered telling Mplus to
save the derivatives of the analysis. This is the less restrictive of the two models and commands are entered telling Mplus to free both the factor loadings and thresholds within and across the two groups. The second step is to open a new syntax screen, enter the same measurement and structural models, but this time telling Mplus to compute the chi square difference test using the derivatives that were just saved. Also, this is the more restrictive model and so the factor loadings and thresholds are not allowed to vary across groups; equality is constrained.

The model terminated normally for both the less restrictive and more restrictive models. In the less restrictive models, the factor loadings were different for both males and females and so were the thresholds. This was not true of the more restrictive model; the factor loadings were constrained across the groups. However, an error message was generated: THE CHI-SQUARE COMPUTATION COULD NOT BE COMPLETED BECAUSE OF A SINGULAR MATRIX. The chi square difference test did not compute. A singular matrix is a problem because computations use matrix algebra and rely on the inverse of a matrix to perform analyses: “a singular matrix is problematic because it has no inverse; the matrix algebra equivalent to division is multiplying a matrix by the inverse of another matrix” (Brown, 2006, p.98). It is possible to resolve this issue by assessing the data for multicollinearity, or determining if “one or more eigenvalues = 0” (Brown, 2006, p.98).

Mplus software support advised trying to find alternative models that were stronger fitting in hopes of allowing the chi square difference test to be computed. This was done while also keeping in mind theory and the research questions of this study.
Pieces of the model were examined. For example, just the measurement part of the model was tested, just the structural relationship between religiosity and delinquency was tested, just the mediators and their relationship to delinquency was tested, and the measurement model with religiosity was tested. None of these models allowed the chi square to be computed.

Mplus suggested that perhaps there is something in the data itself that is preventing convergence. The data was carefully examined, but there do not appear to be exceptionally high standard errors or any issues with variances. The precise issue with the data that is preventing the computation of the chi square difference test is unknown. Mplus was unable to provide any other solutions to this problem. Attempts were made to also use multiple groups analysis with race. Challenges were encountered as well, with a model failing to converge or the matrix not being positive definite for one of the groups, preventing further tests to establish measurement invariance.

Despite this, it is important to glean some information about how the model differs for individuals according to gender and race. The literature shows how there are important differences in both religiosity as well as delinquency based on these variables. At this point, multiple regression was employed to examine the moderating hypothesis between religiosity and gender and race as it relates to delinquency outcomes. Exploring this is different from the original goal to examine how the mediating SEM model differed by race and gender, but nevertheless multiple regression is one tool that can partially capture differences in gender and race.
Testing moderating hypotheses occurs in multiple regression by looking for interactions. Baron and Kenny (1986) write that the model for moderating hypotheses is that there is an independent variable that has a direct line to the dependent variable, a moderating variable (that operates as an independent variable) which also has a direct line to the dependent variable, and an interaction between the independent and moderating variables (they are multiplied together) that has a direct line to the dependent variables. If the interaction path of independent variable multiplied by the moderator is significant, the moderating hypothesis is supported. Interactions are tested in multiple regression by “creating cross-product variables and testing whether these cross-product terms [done by multiplying variables together] are statistically significant when added to the regression equation” (Keith, 2006, p. 133).

Interactions were tested between a principle component of the three religiosity items and race and gender for minor delinquency and serious delinquency separately. The variables are entered into the regression analysis in two blocks. The first is all of the independent variables and the second is the interaction. If the change in R squared is significant, the interaction is significant (Keith, 2006). This analysis was done for minor and then serious delinquency because regression analyses require one dependent variable.

Analyses revealed that all of the interactions (or changes in R squared) were not significant, except for one. The interaction between the principle component of religiosity and Whites was significant for minor delinquency. Race has two dummy variables because it had three categories. The dummy variables are White and Black, with Hispanic being the reference group. The coefficient for the interaction is -.483 (significant at the .01 level). The interaction means that religiosity has a different effect on minor
delinquency for Whites and Hispanics. This means that religiosity impacts minor
delinquency rates differently for Whites and Hispanics. Further exploration could result
in analyzing and graphing the different regression lines for Whites and Hispanics.
Chapter 5: Conclusion

This purpose of this chapter is to draw conclusions about risk and protective factors, specifically religiosity, and delinquency from the results. This chapter also discusses the conclusions in the context of the risk and resilience and sociological literature. Strengths and limitations are given followed by implications for social work and directions for future research.

5.1 Summary of results

This analysis explored the relationship between risk and protective factors and delinquency. This analysis also performed a mediation test between religiosity, association with substance using peers, self esteem, and delinquency. It was hypothesized that the risk and protective factors would be significantly related to delinquency in the structural model and that association with substance using peers and self esteem mediate the relationship between religiosity and delinquency. There was partial support for the hypothesis about the structural path between risk and protective factors and delinquency. The path between victimization and delinquency was significant in the full model with the mediators, while the health and school domains were not. However, in the model that
only included the risk and protective factors and delinquency victimization, religiosity and health had significant paths to delinquency. There was no empirical evidence of association with substance using peers and self esteem being mediators between relationship religiosity and delinquency. The multiple group analysis was unable to be performed due to limitations of the data. These results will be discussed in further detail according to the following sections.

5.1. 1 Adolescence

The literature has shown that adolescence is a crucial time in human development. There are numerous changes occurring for adolescents as well as new rights and privileges given to them (Austrian, 2002). Engaging in delinquent behavior can severely impact adolescents’ ability to navigate this development stage and successfully transition into adulthood (Lanctôt, Cernkovich, & Giordano, 2007). Although this research did not specifically explore any hypotheses related to the developmental stage of adolescence, the descriptive statistics reveal a snap shot of adolescents in the United States in 2008.

About 30% of adolescents in this sample identify as a racial or ethnic minority. The chi square analyses of religiosity and race as well as ANOVA analyses between type of delinquency and race all reveal significant differences. Since this data set is nationally representative, the conclusion can be made that awareness of cultural, linguistic, and ethnic differences is essential for working with adolescents. It is important for social work interventions to be culturally competent and include aspects of development
specific to racial and ethnic minorities. This will become more important as trends towards increased diversity of the United States population continues (Day, 2010).

Furthermore, differences according to region should be considered. The data suggest variability in geographic location for adolescents. Almost 31% of adolescents live in a farm, country, or small town and about 30% live in a large city or suburb of a large city. ANOVA tests of minor and serious delinquency show that there are significant differences by region. For example, adolescents living in farming areas had lower rates of minor delinquency than adolescents in large cities or suburbs of large cities. Interventions specific to decreasing adolescent delinquency must be aware of the impact of geographic location on adolescents. An effective intervention for urban youth may not have the same impact for youth in rural areas.

The descriptive statistics also give insight into adolescents’ family composition, participation in activities, self esteem, and peer group. Almost 90% of adolescents live with their mother while about 72% have a father present in the household. This is valuable information as it suggests that emphasis on relationship with fathers or father figures may be important for interventions, especially given the literature’s report that father involvement can help decrease delinquent behavior (Sarkadi, Kristiansson, Oberklaid, Bremberg, 2008). Of the school activities measured in this analysis, participating in school publications (such as newspaper) had the lowest participation and athletic teams had the highest, with music and art in between. On average, adolescents have between a B and B+ grade point average and about half attend college preparatory high schools.
Relating to self esteem and peer groups, adolescents overall do not have low self esteem, but do have friends who use a substance. On average, adolescents agreed with all of the statements measuring self esteem. Generally adolescents have a few or some peers smoking cigarettes, using marijuana, and/or drinking alcohol. The answer categories for these items were none, a few, some, most or all and on average adolescents reported having a few or some peers involved in these activities. Despite some of the sociodemographic differences related to race, urbanicity, family composition, and despite having average grades of around a B, most adolescents have contact with some peers involved in substance use. This gives further evidence that concerns expressed in the literature relating to associating with peers are valid. The data indicate this is a common experience for adolescents in general, indicating that interventions must be cognizant of the role that peers and potentially peers engaging in delinquency play in adolescents’ lives.

5.1.2 Religiosity

The results also lead to conclusions about adolescent religiosity. This study contributes to the literature by providing a fuller picture of religiosity for youth. Thirty three percent of adolescents rarely attend religious services, followed by 29.4% who attend once a week or more, 18.9% who attend one to two times a month, and 18.7% who never attend. Most adolescents view religion as very important (28.7%) or pretty important (27%) with 25.8% saying it is little important and 18.5% reported it is not important. Regarding religious preference, the majority of adolescents are conservative
(25.5%) and 23.9% are moderate and 8.5% are liberal while 13.9% have no preference (and 28.2% of the data are missing). These findings indicate that, in accordance with the literature, adolescents do have religious lives (Smith, Denton, Fari, & Regnerus, 2002). There is a range of answer responses, indicating diverse levels of religiosity among adolescents. The fact that nearly two thirds of the sample attends services at any frequency and views religion as at least a little important suggests that religiosity should not be ignored as it relates to adolescents.

This study also confirms some of the differences in religiosity by sociodemographic variables (Smith, Denton, Fari, & Regnerus, 2002). Regarding gender, females view religion as more important than males. Blacks view religion as the most important, followed by Hispanics, and than Whites. In addition, Whites and Hispanics are more likely to have moderate religious denomination affiliation, while Blacks are more likely to be conservative. Interestingly, those who do not have a father figure in the household attend religious services with less frequency than those who do. Bahr, Maughan, Marcos, and Li (1998), Ozorak (1989), Pearce and Haynie (2004), and Regnerus (2003) note the influence of parental, especially maternal, religiosity on youth and call for the need to examine paternal religiosity as it impacts adolescent religiosity. This provides some indication of a correlation between parental views of religiosity and adolescents’ own views. However, more research is needed on how specifically the parent adolescent relationship shapes adolescent religiosity to understand how and why variables, such as family composition, lead to differences in adolescent religiosity.
Regarding religiosity’s relationship to delinquency, initially the ANOVA tests revealed that religiosity was not significantly different from all of the delinquency variables. The literature has shown partial support for the theory that religiosity has more of an impact on minor delinquency as opposed to serious delinquency (Cochran, Wood, & Arneklev, 1994; Mason & Windle, 2002; Regnerus, 2006; Wallace et al., 2007). This is known as the ascetic hypothesis and it suggests that religiosity has the most impact on those behaviors that are not condemned by larger society (Adamczyk & Pitt, 2009). Therefore, these results are supported by the literature. Only one analysis between a religiosity item and item measuring minor delinquency did not show a statistically significant difference in means (religious attendance and minor drug use). It is interesting that the religious preference variable was significant in all of the ANOVA tests with minor and serious delinquency, which again illustrates that it is capturing an aspect about religiosity that attendance and importance are not.

This research also provides further empirical support for the relationship between religiosity and delinquency in the structural model (Mason & Windle, 2002). In the model measuring the risk and protective factors and delinquency, religiosity has a significant inverse relationship with delinquency. However, the standardized coefficient is -.138. Coefficients of this magnitude have been described as modest in the literature and this result supports the literature’s findings of a modest to moderate inverse relationship religiosity and different types of delinquency (Bahr, Maughan, Marcos, & Li, 1998; Baier & Wright, 2001; Benda, 1995; Butts, Stefano, Fricchione, & Salamon, 2003; Johnson, De Li, Larson, & McCullough, 2000; Johnson, Lang, Larson, & Li, 2001; Johnson, Larson, De Li, & Jang, 2000; Mason & Windle, 2002; Regnerus, 2006; Sinha, 2007; 2010; 2014; 2015; 2016; 2017; 2018; 2019; 2020; 2021; 2022; 2023).
Cnaan, & Gelles, 2007). This further legitimizes not just the role of religion in studying adolescents, but also in addressing adolescent delinquency. While religiosity is neither the strongest nor the only factor related to delinquency, the fact that it is significant when included in a model with other risk and protective factors shows that it is an important part of the overall package that help protect youth from delinquency.

Although the mediating relationships were not significant, the path between religiosity and peers and religiosity and self esteem was significant. There was an inverse relationship between religiosity and peers and a positive relationship between religiosity and self esteem. The direction of these relationships is supported by the literature (Carleton, Esparza, Thaxter, & Grant, 2008; Markstrom, 1999; Muller & Ellison, 2001; Regnerus, 2003; Smith, 2003). This is a small step in increasing understanding about how religiosity operates within a risk and resilience framework. Although causality cannot be established due to using cross sectional data, the data seem to indicate that religiosity is correlated with having low associations with delinquent peers and high self esteem for adolescents.

Also related to the mediation tests, it was found that peer relationships were significantly and strongly related to delinquency, lending support to the large amount of empirical evidence that associating with delinquent peers influences adolescents’ delinquency. Peers had the strongest impact on delinquency out of all of the risk and protective factor and mediating variables in the full SEM model with mediators. This provides valuable knowledge for delinquency prevention programs and suggests that efforts should be spent on addressing peer relationship and dynamics of choosing peers.
Self esteem was not significantly related to delinquency. There is tentativeness in the literature about conclusively stating that low self esteem leads to higher delinquency. The findings from this study indicate that such a conclusion cannot be made. Most of the sample scored high on the self esteem items. Perhaps it is just that having low self esteem corresponds to higher delinquency and not that high self esteem protects from delinquency. Risk and protective factors should not be assumed to be simply the opposite of variables.

Lastly, this dissertation shows the need for better the conceptualization and operationalization of religiosity, especially in current secondary data sets. The fact that the religious attendance and importance items hang together and religious preference does not leads to the conclusion that there are aspects of religiosity that attendance and importance are not fully capturing. It is important to note that the way the religious preference variable is asked and coded could be interpreted as suggesting that greater religiosity corresponds with conservative religious affiliation. An alternative interpretation is that it measures the degree of membership in traditions that require higher levels of conformity or have more literal/fundamental interpretations of scripture. While it may not seem as though religious preference measures the internalization of religiosity, it does measure which faith and spiritual traditions with which adolescents align themselves. This provides a way of gauging aspects of the definitions of religion, such as belief in a supernatural agent, religion as cultural set of rituals, and religion as promoting intragroup cooperation for which that religious attendance and importance alone cannot account. Because of this, religious preference was included as a measure of religiosity with attendance and importance despite the factor loadings suggesting that it is
not grouping with those variables. The literature on the definitions of religion and the impact of religion on adolescents indicate that there are other measures of religiosity that were not included in this data set. Perhaps with the inclusion of more of those measures exploratory and confirmatory factor analyses can be done to determine if there are different factors within the latent variable of religiosity that should be parceled out.

5.1.3 Explanations for juvenile delinquency

The results from the study also have implications for the sociological explanations for juvenile delinquency along with the risk and resilience framework.

The risk and resilience framework offers a broader explanation for delinquency. The fact that there was model convergence and the models terminated normally gives support for the risk and resilience conceptual framework that was used to create the models. While not all of the structural paths were significant, the coefficients were all in the direction proposed by the literature. The findings can all be interpreted from the risk and resilience perspective of risk and protective factors interacting simultaneously to influence delinquency outcomes. In addition, the hypotheses that religiosity serves as a protective factor was upheld.

This work contributes to discussions in the literature about how to measure risk and protective factors. This study did not a priori assign variables to be a risk factor or a protective factor, but rather recognized, similar to Stouthamer-Loeber, Loeber, Wei, Farrington, and Wikström (2002) and Stouthamer-Loeber et al. (2002), that a variable
may operate as risk and protection in different contexts and for different individuals. Instead of creating one risk latent variable and one protective latent variable, domains of risk and protective factors were created. Using this method has raised questions about how variables operate that can potentially lead to more research and greater understanding of how risk and protective interact. For example, experiencing victimization has a positive path coefficient and is statistically significant, meaning that it can be concluded to be a risk factor for delinquency. However, this raises the question of whether a lack of victimization can be considered a protective factor. This could be plausible, while at the same time perhaps the contribution victimization makes to delinquency is only as a risk factor. Simply grouping victimization with other risk factors would have blocked the opportunity to see its individual impact on delinquency and generate research questions arising from that. The risk and resilience framework can be advanced by adopting this or similar methods of measuring variables.

5.1.4 Risk and protective factors

The findings have implications for understanding about individual risk and protective factors. Each risk and protective factor will be discussed.

5.1.4.1 Victimization

This dissertation confirms the status of victimization as a risk factor (Li, Nussbaum, & Richards, 2007; Sullivan, Farrell, & Kliwer, 2006). The path from
victimization to delinquency is positive, meaning that increased victimization corresponds with higher delinquency. Also, this relationship was fairly strong, with the unstandardized coefficient equaling .740 in the model with the risk and protective factors and delinquency. In the model with the mediators the unstandardized coefficient becomes .563, which still indicates a strong path between victimization and delinquency. Examining the standardized coefficients reveals that victimization has a stronger influence on delinquency than any of the other risk and protective factors aside from peers in the mediating model.

It appears that victimization is the most influential factor (peers were not incorporated as a risk and protective factor, but rather a mediating variable). This is interesting given the fact that most of the sample did not experience victimization. About 30% of the sample had property damaged in the past year one or more times, about 20% percent were threatened, but not injured, with a weapon, and around 30% had something less than $50 stolen from them. The experience of victimization was restricted to less than one third of the sample, but was strongly correlated with negative delinquency outcomes. Through exploratory and confirmatory factor analyses, urbanicity and father in household were included with measures of victimization. Urbanicity did not have high factor loadings, but father in household did in both the model with the risk and protective factors and model with the mediating variables. Having a father present in the household conceptually hangs with measures of victimization.

Future research would be needed in order to assess the relative impact of victimization on delinquency in comparison with other risk and protective factors as well.
as understand the relationship between the presence of a father in the household and victimization. Future research could assess whether the lack of victimization served as a protective factor and if this impact is as strong as the impact of experiencing victimization. Perhaps the impact of not having a father in the household is driving victimization’s overall influence on delinquency. Longitudinal work would be helpful in addressing the possibility of a feedback loop; participation in delinquency could increase the likelihood of victimization, which could increase rates of delinquency.

5.1.4.2 Healthy diet

In the model of the risk and protective factors, the path between healthy diet and delinquency is significant and negative. This corresponds to the literature (Corcoron-Nicols & Casebolt, 2004; Nelson & Gordon-Larson, 2010). The majority of the adolescents in this sample engaged in health promoting behaviors. This corresponds with decreased delinquency. The coefficient was not very strong. In fact, the strength of the path between health and delinquency was similar to the path between religiosity and delinquency. When the mediators were added to the model, the path between health and delinquency, although still negative, becomes insignificant.

These results show that health can be considered a piece of the package of support, opportunity, and resources that adolescents need to have non delinquent outcomes. The healthy diet items had a mild correlation with grades (r=.235, .181, .161, p<.01). There was a weaker correlation also with high school type (r=-.113, -.159, -.162, p<.01) and also participating on a school sports team (r=.161, .120, .163, p<.01). It could
be worth exploring whether the health dimension is capturing something related to school participation and performance.

Perhaps there is a different concept that was not included in this analysis that is both related to health behaviors and delinquency. For example, parental involvement is a variable that would appear to be correlated with health promoting behaviors and the literature shows corresponds to delinquency (Cleveland, Feinberg, Bontemp, & Greenberg, 2008; Corcoran & Nicols-Casebolt, 2004; Green, Gesten, Greenwald & Salcedo, 2008; Kostelecky, 2005). Parental involvement, supervision, or other variables related to the family or social support systems could at the core be measuring the same thing as the health behaviors, because engaging in those behaviors requires someone to purchase healthy food, and teach adolescents the importance of health. (Neumark-Sztainer, Story, Resnick, & Blum, 1998). The health variables should not be abandoned in future research, but should be incorporated differently, either as part of a family or school dimension.

5.1.4.3 Educational environment

The school dimension is inversely related to delinquency. This corresponds with findings in the literature stating that increased academic performance (grades), school activities participation, and higher maternal education correspond to lower delinquency (Henry & Huizinga, 2007). Nevertheless, the path from school to delinquency is not significant in neither the model with the risk and protective factors nor the mediating
relationship. It is possible that using a data set that includes more measures of items related to the school environment would allow for a more complete assessment.

It is surprising that educational environment was not significantly related to delinquency given the literature’s consensus that variables related to the school are inversely related to delinquency (Corcoran & Nicols-Casebolt, 2004; Green, Gesten, Greenwald & Salcedo, 2008; Whitney, Renner, & Herronkohl, 2010). An individual CFA was done on just the school domain to determine if there was unacceptable model fit. The model fit was acceptable (CFI= .904, TLI=.841, and RMSEA=.054). This suggests that the educational environment domain was not constructed inappropriately. Theory was used as a guide for selecting the school variables from the data set and the CFA does not show cause for concern about how it is constructed.

One explanation for the disparity in findings is that some of the measures of the school environment that have been cited in the literature were not included in this study. For example, this study could not measure school connectedness, but it has been shown to decrease delinquency (Fredricks, Blumenfeld, & Paris, 2004; Janosz, Archambault, Morizot, & Pagani, 2008). It is also possible that although the factor loadings did not indicate that the items were measuring different constructs, there may be more than one construct that was included in the school latent variable. Having more items related to the school environment may result in the ability to conceptualize and test more constructs related to school. Even including a family or community latent variable might incorporate items such as mother’s education or high school type which loaded with school in this
analysis. This will enable analyses to separate, as much as possible, family, community, or other factors, from school.

In summary, there was partial support for the hypothesis regarding the structural path from the risk and protective factors to delinquency. The mediating hypotheses were not supported.

5.2 Strengths and limitations

Reviewing the findings has revealed several strengths and limitations of the current data analysis. These will be discussed.

5.2.1 Strengths

A significant strength of this study is in exploring the mechanism through which religiosity impacts delinquency. This project examined the link between the risk and resilience framework and how risk and protective factors operate (Wright & Masten, 2005). Although the overall mediation relationship was insignificant, information was learned about what part of paths between religiosity, the mediating variables, and delinquency was significant. This generates questions for future research about how religiosity may operate.

This research project also used improved methodology to study risk and resilience, which has suffered from poor methodological rigor (Zimmerman &
Arunkumar, 1994). Structural equation modeling was an appropriate tool to use and it raised the sophistication of the study. In addition, not restricting whether a variable could function as a risk or protective factor was an improvement because it addressed critical essays in the literature about shortcomings of this framework. This again resulted in more research questions about risk and protective factors, which increases the potential for more knowledge to be developed about delinquency. Using a current data set is also a strength related to improving methodology. The MTF data set in this study is from 2008, resulting in findings that are relevant for adolescents.

A third strength is clearly stating a definition of religion in the research. Often, studies do not clearly conceptually define religion, leaving readers to draw their own conclusions about what is meant by the term. This research outlined sociological, psychological, and anthropological definitions of religion and specifically identified the ones that would be included in this research. Religious preference was also included as a measure of religiosity to attempt to create a more comprehensive measure of religiosity. The descriptive and bivariate analyses also provided more insight into the religious lives of the adolescents sampled.

5.2.2 Limitations

There are several limitations to the data. The first is the structure of the MTF data. There were six different versions of the questionnaire that were given to high school students. The students were not all asked the same questions, which limited the variables that were available for analysis. This also limited the ability of the data to fully measure
risk and protective factors. For example, measures of family life/interactions were not included and these variables have been shown to be vital for understanding delinquency (Burchinal, Roberts, Zeisel, & Rowley, 2008; Webster-Stratton & Taylor, 2001). Besides assessing for self esteem, this form of the data did not include any measures of mental health functioning, which is also important when considering adolescent delinquency (Burns & Rapee, 2006; Green, Gesten, Greenwald & Salcedo, 2008). This data set was chosen partially because it includes rich accounts of adolescents’ thoughts and opinions about various topics and in doing so reveals a unique picture of adolescence in the United States in 2008. However, the structure of this data set is a limitation because not as many risk and protective factors as desired were able to be included. Also, as has already been discussed, MTF was limited in terms of the items available to operationalize a construct. For example the victimization section did not include sexual assault. A further limitation related to MTF is that only the sample weight was collected. Without the PSU and strata weights, Mplus cannot account for the complex data. Only the sample weight can be used, since MTF does not release any cluster or strata information due to confidentiality concerns.

How the items in MTF were constructed and the natural distribution of the variables presented another limitation in the SEM analysis and required the use of the WLSMV estimator. Mplus was able to handle categorical variables in the SEM models and non normal data, but in order to do that the WLSMV estimator had to be used. It is fortunate that the WLSMV estimator has been developed, but it nevertheless limits the degree of sophistication that could be done in the analysis. For example, confidence intervals for RMSEA could not be computed using this estimator, special chi square
difference testing had to be done, and full information maximum likelihood (FIML) imputation method for missing data could not used.

Related to this, it is a limitation that the multiple group analysis could not be performed because the test to establish measurement invariance or partial measurement invariance could not be completed. Exploring if there were differences in the model based on gender and race could have resulted in more information about risk and protective factors and adolescent delinquency. The chi square difference test resulted in a singular matrix and therefore could not be computed.

Fifth, the minor and serious delinquency variables were originally conceptualized as two separate constructs. The data showed that they were better conceptualized as one construct. While this meant that the matrix would be positive definite, it also meant that the impact of the risk and protective factors on different types of delinquency could not be assessed using SEM. This prevents some of the intricacies of how risk and protective factors relate to delinquency from being reported.

An important limitation for most secondary data sets collected from adolescents in schools is that it is not truly generalizable to the entire adolescent population in the United States. Youth who were not there on that particular day and also adolescents who have dropped out of school were not included. These youth who do not attend school could represent a statistically significant different population than the youth sampled (Wallace et al., 2007).

Lastly, there is the concern about feedback loops and reciprocal relationships (Kline, 2005). Maybe adolescents are not religious and engage in delinquency, which
further strengthens their low religiosity, leading to more delinquency. The relationship between religiosity and peers, victimization, and the other risk and protective factors could work this way (Benda, 1997; Dew et al., 2008; Gifford-Smith, Dodge, Dishion, & McCord, 2005; Lonorando, Giordano, Longmore, & Manning, 2009; Matsueda, 1992; Regnerus, 2003). Specific tests of reciprocal relationships are needed to assess this. In order to better analyze the direct relationships hypothesized in this dissertation, longitudinal data could be used.

5.3 Social work implications

This study has implications for social work in terms of practice and policy. All of these implications stem from the need to decrease adolescent delinquency.

5.3.1 Practice

There is a social cost to adolescent delinquency. Throughout discussions of adolescent delinquency in the government and the literature a certain urgency to address this issue can be seen. In 1995, former US Attorney General Janet Reno was briefed on the conditions of juvenile violence. She was told there would be, “a future wave of youth violence that will be even worse than that of the past ten years” (Fox, 1996, p.1). Perhaps one reason why this was feared is due to the social costs of adolescent delinquency. First, there are costs for the victims of adolescents’ crimes. These costs include medical expenses, police, fire, and paramedic services, property damage and theft, civic litigation, decreased quality of life, etc. (Menard, 2002; Welsh et al., 2008). It is estimated that the
United States spends $158 billion each year on the consequences of adolescent violent crime (Welsh et al., 2008). Second, there are costs for the adolescent perpetrators of delinquency related to juvenile justice system involvement such as, housing, treatment, probation, and possible transition to the adult prison system (Miller, Fisher, & Cohen, 2001). In a study of adolescent crime in Pennsylvania in 1993, Miller, Fisher, & Cohen (2001) found these costs to be over $46 million dollars. Furthermore, adolescent delinquents have higher rates of mental health issues, substance dependence, unemployment, and homelessness (Menard, 2002; Lanctôt, Cernkovich, & Giordano, 2007). An individual’s “typical criminal career over the juvenile and adult years” costs about $1.7 to $2.3 million, including costs for the crime, not completing high school, and substance use (Welsh et al., 2008, p.6).

Social work practice seeks to develop interventions to decrease these social costs and ensure that adolescents can transition into fully functioning and independent adults. Prominent scholars often note the potential implications risk and resilience research has for prevention programs (Borkowski, Farris, & Weed, 2007; Masten, 2007). From the information collected in this study, the following implications for social work practice are put forth. These implications are not specific to a type of therapy, technique, or content of prevention programs, but do offer general observations. Interventions aimed at decreasing delinquency should be sensitive to differences in geographic location of adolescents, race/ethnicity, and family composition. The parameters for peers and victimization factors were strong in the structural model between risk and protective factors and delinquency. Further attention should focus on examining how these variables relate to
one another and also to delinquency outcomes. Conclusions about causation cannot be generated from this project because the data is cross sectional. Information from further research could have application to prevention programs.

Finally, future intervention research could be done with the acknowledgment that religiosity is a part of adolescents' lives. A brief summary of current trends in interweaving faith and prevention work provides a context for the findings of this study. The government has taken an interest in faith based organizations, which emerged from the Charitable Choice provision within the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (Ferguson, Wu, Spruijt-Metz, & Dyrness, 2007). The White House hosts the Office of Faith-Based and Community Initiatives in recognition of the impact that religious organizations have on individuals’ well-being in various communities (Ferguson et al., 2007). Despite the government’s desire to incorporate faith based organizations into service delivery, there is little empirical evidence that they work (Ferguson et al., 2007). One substantial issue related to this is current conceptual and operational definitions of faith (Ferguson et al., 2007). There has been the tendency to define faith “as a contextual factor rather than a programmatic one” (Ferguson et al., 2007, p.265). Another issue is that there is little knowledge about the mechanisms through which faith based programs operate (Mears et al., 2006). Faith could have a direct or indirect impact on delinquency (Mears et al., 2006). Or, faith could be impacting delinquency depending on the existence of other factors (Mears et al., 2006). At the same time faith could impact delinquency “only after a threshold has been crossed—that is, when a sufficient ‘dose’ of faith has been achieved” (Mears et al., 2006, p.357). The results from this research, which showed statistically significant relationships
between religiosity and other variables, suggests that there are potentially relationships between religiosity and other factors correlated with delinquency that are currently unknown. Better understanding adolescent delinquency and how to prevent it includes further exploring the relationships between religiosity and other variables.

This background illustrates that more theoretical research and program evaluation is needed to uncover what, if any, aspects of religiosity could be incorporated into the content of interventions. Nevertheless, the findings from this study propose that practitioners should be aware that religiosity is a factor in adolescents’ lives. At this point, incorporating this into treatment may just include exploring for religiosity in psychosocial assessments, exploring what religion means to adolescents and how it influences their lives if the adolescent reports a religious affiliation, or connecting with members of that adolescent’s faith community, especially if services are provided to adolescents. While there is no consensus in the literature about how to incorporate religiosity into the early childhood, family, school, community, or other types of interventions for adolescent delinquency, social work practice can develop interventions and policies that begin to examine the variables in this research project. This will help uncover how and in what ways religiosity may be another potential resource for assisting adolescents.

5.3.2 Policy

Related to implications for social work policy, a summary of how delinquent adolescents have been viewed in the United States is given. Historically the government’s
response to problem youth has been to detain and incarcerate them. As of 2003, 347 out of every 100,000 adolescents were under correctional supervision in some way (Snyder & Sickmund, 2006). The movement to incarcerate adolescents began in 1899 with the establishment of the first court for adolescents in Illinois (Mears et al., 2007). The goal was to rehabilitate and “save” disadvantaged youth under 16 years old (Mears et al., 2007). This would be achieved by incarcerating these disadvantaged youth separately from the corruption of adult offenders (Reppucci, 1999). At the core of this movement was the belief that youth cannot be held as accountable for their actions as adults can be (Reppucci, 1999). Along with children, adolescents have been termed as minors.

Before the 1950s, the age of youth under jurisdiction of the juvenile court was raised to 18 and the purpose of this, due in part to growing awareness of adolescence as a developmental phase, was to rehabilitate youth (Reppucci, 1999). During the 1950s, the juvenile court was met with criticism because of a lack of due process rights for youth (Reppucci, 1999). Despite intentions for rehabilitation, juvenile courts were in nature punitive (Reppucci, 1999). Throughout the 1960s, due process rights for youth were expanded and the juvenile justice court system became less random in its administration (Mears et al., 2007). This also lead to a redefinition of adolescents’ decision making capabilities; they were increasingly seen as more responsible for their behavior and this was becoming more reflected in sanctions given to juvenile offenders (Reppucci, 1999).

Since that time, legislation has been enacted to decrease delinquent behavior and provide services for youth. Examples include the Juvenile Justice and Delinquency Prevention Act and No Child Left Behind (ABA, 2009; DOE, 2006). The findings from this study indicate that continued efforts to create policies that decrease the systemic
roots of adolescent delinquency are needed. Particular emphasis could be placed on addressing victimization and association with delinquent peers. Funding for increased options for after school activities, for example, could be useful as well as psychoeducation about peer pressure and conflict resolution. Social workers should advocate for policies that are sensitive to differences in gender, race, region, etc. The findings from this study show that these sociodemographic characteristics impact religiosity and delinquency.

Potentially incorporating religiosity into delinquency prevention efforts also requires an examination of the law and social welfare policy. As will be discussed in the next section, more research is needed in order to identify how religiosity influences delinquency. There is an acknowledgment that religiosity is one of many factors influencing adolescents. The conversation seems to rarely move beyond stating this finding. In order translate research findings about the role of religiosity in delinquency into prevention efforts, exploring the legal and political ramifications of incorporating aspects of religiosity, especially if those prevention programs are government supported, must be done. This can take place on a research level, but also on a policy level. Social workers can play a key role in leading these discussions and exploring in what ways the protective elements of religiosity can be used as resources for delinquency prevention.

5.4 Directions for future research

Future research should examine how religiosity impacts adolescents and how results from findings can contribute to intervention development. The findings show that females and minorities are more religious, but more research is needed to understand why
this is. How does family composition impact religiosity? What would father’s presence do to influence adolescent religiosity? The results also indicate that adolescents ascribe to the conservative and moderate religious faith traditions the most. More exploration into this is needed. Why do most adolescents identify as belonging to conservative or moderate belief systems? How does that impact their lives? Are adolescents identifying with those faith traditions because they truly understand the tenets of those beliefs and are committed to them? Or, do adolescents identify with the same faith tradition as their parents or caregivers?

One piece that could to be added to exploring the role of religiosity and delinquency is locus of control. Locus of control is a personality variable and emerged out of social learning theory (Bearinger & Blum, 1997). The concept of locus of control refers to, “the generalized expectancy of reinforcement as either internal or external to the self” (Chubb, Fertman, & Ross, 1997, p.2; Bearinger & Blum, 1997; Gale, Batty, & Deary, 2008). Chubb, Fertman, and Ross (1997) write that internal locus of control means that the reinforcement comes from within individuals, such as their “own effort, ability, characteristics, or behavior” (p.2), and external locus of control means that reinforcement comes from outside of individuals, such as “chance, fate, luck, or powerful others” (p.2; Bansal, Thind, & Jaswal, 2006; Bearinger & Blum, 1997; Goggin et al., 2007). Locus of control is directly related to the health and problem behavior choices adolescents make (Bearinger & Blum, 1997; Gale, Batty, & Deary, 2008; Goggin et al., 2007). Research has uncovered several variables correlated with internal locus of control and they are completing high school, using self control, taking personal responsibility for behaviors, being independent, having positive relationships with peers and others, having
a positive living environment, emotional support, and having low anxiety (Bansal, Thind, & Jaswal, 2006; Chubb, Fertman, & Ross, 1997; Gale, Batty, & Deary, 2008).

While it may seem that high religious individuals would have high external locus of control because they would attribute reinforcement of behavior to God as opposed to their individual effort, the literature shows that the relationship between religiosity and locus of control is complex (Bensen & Spilka, 1973; Fiori, Brown, Cortina, & Antonucci, 2006; Goggin et al., 2007; Jackson & Coursey, 1988). Fiori et al. (2006) write “religion may increase external control, but at the same time a reliance on God may actually improve one’s sense of internal control” (p.241) by operating as a coping mechanism and as a way of making meaning of the world. By serving as a causal attribute, religion provides individuals with interpretations of difficult situations that reinforce the legitimacy of the religion and validation of “appropriate religious action, thereby possibly increasing a sense of internal control.” (Fiori et al., 2006, p. 242; Goggin et al., 2007; Jackson & Coursey, 1988).

Incorporating locus of control allows researchers to recognize the developmental stage of adolescence. This is because adolescents with internal locus of control have hypothetically internalized religion out of their own volition (not based on pressure from outside sources or just a will to conform), because those with a higher internal locus of control theoretically take more ownership of their actions and beliefs (Chubb, Fertman, & Ross, 1997; Gale, Batty, & Deary, 2008). Therefore religiosity could have a different impact on the delinquent behaviors of youth with more internal locus of control than adolescents with more external locus of control. Future work in this area would help
increase knowledge about how adolescents internalize religion and form a religious identity.

A byproduct of this work is creating fuller operational definitions for religiosity that go beyond religious attendance and importance. Qualitative work would be helpful in establishing what religiosity means to adolescents can be better incorporated into quantitative or mixed methods research. In a systematic review of religiosity and adolescent health, Rew and Wong (2006) describe how some studies have used more than just religious attendance and importance to measure religiosity. Studies have asked how often adolescents pray, read scripture, and believe in a divine being. This offers more insight into religiosity, but these items do not seem to emanate from adolescents’ experiences with religiosity. Qualitative research could generate other aspects about religiosity that specifically relate not just to religion but also to the developmental stage of adolescence. This may result in research that more accurately captures the religious lives of adolescents. Additionally including qualitative methods would enable researchers to examine aspects of religiosity and other variables that are not included in large secondary data sets.

Much of the literature to date employs quantitative research methods and while this has resulted in increased understanding of adolescent delinquency, scholars should not ignore qualitative research (Fraser, Richman, and Galinsky, 1999; Rutter, 2007). Because quantitative research is rarely able to capture individuals’ experiencing resilience, qualitative research can be helpful (Fraser, Richman, & Galinsky, 1999; Washington, 2008). Qualitative research could help identify what youth experience as
risk and protective factors and how these factors impact delinquent outcomes (Aisenberg & Herrenkohl, 2008; Hauser & Allen, 2006; Waller, 2001). Moreover, qualitative research, in the form of interviews or focus groups, could assist in uncovering the mechanisms through which religiosity and other factors influence delinquency. Explorations into the relationship between religiosity and association with substance using peers and self-esteem could be done in addition to other factors.

The findings from this study reveal that, in agreement with calls in the literature, investigations using the risk and resilience framework are aided by using longitudinal research designs (Carothers, Farris & Maxwell, 2007; Green et al., 2008; Fraser, Richman, & Galinsky, 1999). The order of when events occurred and when individuals were influenced by factors matters and is helpful in dealing with issues related to reciprocity and feedback loops (Fraser, Richman, & Galinsky, 1999). Using longitudinal data allows researchers to study patterns in behavior, determine the onset of risk and protective factors, and decrease recall bias in studying whether risk factors were present before delinquent behavior began (Green et al., 2008). Longitudinal studies have been instrumental in identifying risk and protective factors as well as “developmental pathways toward delinquency” (Green et al., 2008, p.324; Masten, 2004). Using this type of research design also enhances researchers’ capacity to uncover the mechanisms that risk and protective factors operate through (Rutter, 2007).

The risk and protective factors examined had differences in terms of significance to delinquency. Future research should focus on not just the interplay between risk and protective factors to decrease delinquency, but also the relative contribution of the
factors. For example, in this study victimization was the most influential factor, which came as a surprise because there was nothing in the literature that indicated that it had more impact on youth’s delinquency than the school environment. Perhaps this finding is only restricted to this data set, but research should be devoted to determining the relative strength of risk and protective factors. This would increase prevention programs’ ability to focus on the most salient aspects of adolescents’ risk for delinquency.

Similar to this, the literature provides little guidance in terms of choosing which risk and protective factors to incorporate. Authors such as Cocroan and Nicols-Casebolt (2004) and Green et al (2008) offer lists of risk and protective factors, but do not highlight key factors that should be included. This research attempted to include any risk or protective factor identified in the literature and available in the data. The risk and resilience framework should examine if this is the most effective strategy. Perhaps if risk and protective factors were somehow quantified in terms of their effect on outcomes and grouped into categories of primary or secondary impact that would guide researchers’ choices about which ones to include. This would provide guidance in choosing data sets and variables because researchers would be able to look for a mixture of primary or secondary factors and even note in their study what mixture of primary or secondary factors there were. This would surely guide the generation of hypotheses about what factors would have impact on outcomes. For example, while this study included health, it did not make the assumption that it was as influential on delinquency outcomes as victimization.
Future research will help risk and resilience with its goal of producing a framework capable of guiding researchers towards creating knowledge that will have a lasting impact on addressing adolescent delinquency whether that impact is through research, policy, or establishing prevention programs. This framework is built with a deep richness and creativity related to its concepts, understanding of the complex issues surrounding adolescent delinquency, and incorporation of cultural diversity that has the potential to make a strong and enduring contribution to delinquency prevention, if a purposeful effort were made to address its limitations.


Kim, J. A structural equation modeling analysis of the effect of religion on adolescent delinquency within an elaborated theoretical mode (Doctoral dissertation). The Ohio State University


