Familismo and Adolescent Health:

The Role of Key Cultural and Familial Processes on Latino Youth Substance Use

by

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ABSTRACT

A secondary data analysis was conducted to investigate the direct and indirect effects of family traditionalism, family cohesion, and parent involvement on alcohol, cigarette, and marijuana use in a sample of pre-adolescent youth (N = 635) and their parents (N = 462). Aim one hypothesized that family cohesion and family traditionalism would be indicators of a higher order construct, operationalized as familismo. Aims two and three hypothesized that family traditionalism, family cohesion, and parent involvement would be protective against youth substance use. Finally, aim four hypothesized that acculturation would decrease the protective effects of family traditionalism and family cohesion on substance use.

Using second order confirmatory factor analysis, aim one found that family cohesion and family traditionalism were indicators of a second order structure. Regarding aims two and three, a consistent significant association was found between family cohesion and parent involvement across alcohol, cigarette, and marijuana use outcomes. As well, family cohesion was significantly and inversely associated with past 30-day alcohol use amount (β = -.21, $p < 0.05$), lifetime alcohol use (β = -.19, $p < 0.05$), and lifetime marijuana use (β = -.31, $p < 0.001$). Counter to what was hypothesized, a significant positive relationship between family traditionalism and past 30-day alcohol use amount was found. No significant indirect effects were found. Specific to aim four, significant moderation effects were found between family cohesion and acculturation on alcohol and cigarette use. Higher acculturated youth had greater past 30-day alcohol and

cigarette use amount compared to low acculturated youth; as family cohesion increased, alcohol and cigarette use for both low and high-acculturated youth decreased.

This study has important implications for social work and future research specific to culture, family, and youth substance use. This study may assist direct social work practitioners, school personnel, and other professionals that work with Latino youth and families in the tailoring of services that are culturally sensitive and relevant to this population and provides further understanding regarding the impact of culture and family on Latino youth substance use. Findings and limitations are discussed specific to social work practice, policy, and research.

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CHAPTER 1

INTRODUCTION

Eighth grade Latino adolescents have the highest rates of alcohol and marijuana use when compared to their White and African American peers (Johnston, O'Malley, Bachman, & Schulenberg, 2013; Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2014), which has deleterious and long-term public health, social, and economic costs (Benard, 2004; Office of the Surgeon General, 2007; Zucker, 2006). Latino youth tend to report higher drug abuse and dependence (Bonnie & O'Connell, 2004; Miller et al., 2007; SAMHSA, 2011), have greater involvement in the criminal justice system (Arya, Villarruel, Villanueva, & Augarten, 2009), are more likely to engage in risky sexual behavior (Kann et al., 2014; Kotchick, Shaffer, & Forehand, 2001; Naimi, Lipscomb, Brewer, & Gilbert, 2003) and have one of the highest high school dropout rates compared to their White and African American peers (Pew Hispanic Center, 2011). These differing behavioral health outcomes are thought to contribute to health disparities among Latino populations, highlighting the critical importance of early prevention/intervention with youth.

Early substance use increases the likelihood of experiencing the aforementioned deleterious outcomes (Bonnie and O'Connell, 2004; Miller et al., 2007; Newcomb & Bentler, 1986) and as such, prevention efforts are vital in delaying or preventing the onset of substance use. That being said, current work leaves a gap as culture is often not included both in the etiology of the problem as well as in the development of prevention/intervention programs for Latino adolescents who use substances (Cervantes,

Goldbach, & Santos 2011; Napier et al., 2014). Although there are some effective prevention interventions that place high value on culture and make a point to incorporate culture into the delivery of the program to Latino populations, more understanding is needed on the specific direct and indirect pathways of cultural and familial processes. Examples of two such programs specific to Latino populations include the *Familias Unidas* (Pantin, Schwartz, Sullivan, Coatsworth, and Szapocznik, 2003b) and *Families Preparing the Next Generation* (Marsiglia, Williams, Ayers, & Booth, 2013; Williams, Ayers, Garvey, Marsiglia, & Castro, 2012) programs.

The success of the aforementioned programs is in part due to the utilization of an ecodevelopmental framework. Ecodevelopment, which incorporates the social and family environment, cultural influences, developmental processes, and individual characteristics into program structure and goals (Szapocznik & Coatsworth, 1999) can help in elucidating how micro, meso, macro, and exo processes interact and influence Latino youth behavior. The developmental, familial, and cultural contexts that Latino youth experience is particularly fundamental in understanding how these processes are protective or risky for substance use. More research is needed that investigates the relationships between key ecodevelopmental outcomes and substance use using multivariate analytic approaches (Koss-Chioino & Vargas, 1999; Prado, Szapocznik, Maldonado-Molina, Schwartz, & Pantin, 2008).

Family and Culture

Culture, the distinct beliefs, practices, values, worldviews, knowledge, and attitudes that are shared among a group of people, informs how individuals view the world, and how they interact with others; culture is often expressed through events, traditions, holidays, and ritualized behaviors (e.g., Dia de Los Muertos, quinceanera's; Escobar and Vega, 2006; Koss-Chioino & Vargas, 1999; Marsiglia & Kulis, 2009). Culture frequently refers to "language, religious beliefs, nationality, and family heritage" as key aspects distinguishing one group from another (Castro & Hernandez-Alarcon, 2002, pg. 789; Escobar & Vega, 2006; Koss-Chioino & Vargas, 1999; Marsiglia & Kulis, 2009). The family, a central part in the conceptualization of Latino culture, is thought to be the primary influence on and main conduit for behavior, attitudes, and social norms for Latino adolescents (Hepworth, Rooney, Dewberry-Rooney, Strom-Gottfried, 2013; Marsiglia, Kulis, Parsai, Villar, & Garcia, 2009). As such, many of the cultural effects on Latino adolescent substance use "operate through family processes" (Prado et al., 2008, p. 13). The family is crucial to positive cognitive and social development in youth (Marsiglia et al., 2009) and can be a strong deterrent of substance use (Prado et al., 2009).

Families act as social support systems (De La Rosa & White, 2001) by providing "critical assets [that] foster competence, promote successful development, and build resiliency in youth" (Fitzpatrick, Wright, Piko, & LaGory, 2005, pg. 266). In Latino families, great importance is placed on traditional family values such as respecting/deferring to elders (*respeto*), trustworthiness (*confianza*), and maintaining a close knit family unit (*familismo*) (Castro et al., 2007; Halgunseth, Ispa, & Rudy, 2006;

Valdes, 1996). It is thought that these cultural values teach children to identify with a strong sense of self, which is connected to the overall family (Feldman, 2008). Familismo, which is the focus of this study, is a cornerstone in Latino populations and is particularly important to examine. Family cohesion, a cornerstone of familismo, refers to family closeness, structure, and beliefs (Behnke, MacDermid-Coltrane, Parke, Duffy, Widaman, 2008; Marsiglia, Miles, Dustman, & Sills, 2002; Marsiglia, Parsai, and Kulis, 2009), and has been found to protect youth against substance use (Deng et al., 2006; Marsiglia et al., 2009; Roosa, Dumka, & Tein, 1996).

Another aspect of familismo that is salient to Latino's is family traditional norms (*traditionalism*). Traditionalism comprises of highly significant values and beliefs that families maintain (Castro, Stein, & Bentler, 2009) and are usually centered on a conservative family structure in which customary familial norms are accepted and reified (Castro et al., 2009, p.3; Cuadrado & Lieberman, 2002). Culture can have a strong impact on family functioning and adolescent development in both positive and negative ways (Castro and Alarcon, 2002; Prado et al., 2009). Cultural traditions may help Latino families unify and strengthen through belonging and dedication to the family (Castro & Hernandez-Alarcon, 2002; Koss-Chioino and Vargas, 1999).

Family cohesion, which has some similarities to family traditionalism, appears to be protective for adolescents. Studies however have varied in their findings after accounting for family structure and degree of acculturation. Some studies have found family cohesion higher among families that were less acculturated (Baer & Schmitz, 2007; Miranda, Estrada & Jimenez, 2000), yet the relationship between acculturation and

family cohesion has been relatively unexplored (Wagner et al., 2008). Additionally, while cultural processes are assumed to impact family functioning, there is limited consensus on the actual effects of family traditional norms on family functioning and adolescent substance use. Additional research is therefore needed to investigate how familismo, specifically traditionalism and cohesion, influences adolescent behavior and family functioning (Castro et al., 2007; Prado et al., 2008).

Theoretical Approach: Ecodevelopmental Theory

Ecodevelopmental theory is a social ecological approach and posits that key socio-cultural and familial factors impact adolescent behavior (Szapocznik & Coatsworth, 1999). Ecodevelopment incorporates developmental and cultural contexts, which are critical to understanding Latino family functioning and adolescent problem behavior. Understanding the cultural context of Latino families' influences on family functioning, the transmission of values/beliefs and the maintenance of behavioral expectations are critical in determining what is relationally normative behavior (Coatsworth, Pantin, & Szapocnik, 2002a; Prado et al., 2009).

Ecodevelopmental theory provides a systems framework, including the micro, meso, macro, and exo levels, for understanding how socio-cultural and family processes operate to create resilience or risk for Latino adolescents. Ecodevelopmental approaches consider socio-cultural context, adolescent development, and familial processes as key tenets impacting Latino adolescent behavior. In accordance with this ecodevelopmental lens, it is posited that increased family functioning is likely to strengthen positive connections between parents and their children. As well, ecodevelopmental theory finds

that when parents are involved in outside support systems such as community and school groups, youth are likely to yield positive benefits (Szapocznik & Coatsworth, 1999; Pantin et al., 2003a).

The main thesis of ecodevelopmental theory is that the interconnectedness between family, culture, peer, school, and neighborhood contexts has an effect on adolescent development and behavior (Pantin et al., 2003b). Considering this interconnectedness, separating the individual from their social ecosystem provides a fractured and incomplete perspective and is counterproductive to understanding adolescent problem etiology and family functioning (Szapozcnik & Williams, 2000). Identifying the most influential processes and examining their effects on family functioning and Latino youth substance use is necessary in defining and targeting the most critical intervention points for youth and families (Szapocznik, Prado, Burlew, Williams, & Santisteban, 2007).

Current Study

Utilizing a mediational framework, this study investigates whether family traditionalism, family cohesion, and parent involvement protect Latino youth from substance use. The hypothesized model for this study employs ecodevelopmental theory to help explain the influence of said familial and cultural processes on Latino adolescent substance use (Pantin et al., 2003a; Pantin et al., 2003b; Prado et al., 2010). It is hypothesized that family cohesion, family traditionalism, and parental involvement will be protective against substance use. The effects of family cohesion and family

traditionalism will decrease however depending on the level to which youth are acculturated.

Social Work Implications

Substance use can be detrimental to youth development and social outcomes and since low-income Latino adolescents are an already "at risk" group, with high poverty and high school dropout rates, substance use in this population may be more likely and have greater consequences over time (Prado et al., 2009). Socio-cultural and familial factors, such as traditionalism, cohesion, and parent involvement, may act to protect Latino youth from risky behaviors such as substance use (Castro et al., 2007; Pantin et al., 2003b). Thus, this study has implications for culturally relevant prevention programming in a social work context as well as for social workers that engage with Latino families in many different settings such as schools, social service agencies, and other health and mental health settings.

Empowering the family is a cornerstone of the strengths and person-in-environment approaches and is a trademark of ethical social work practice (Hepworth et al., 2013; Payne, 2005). Exploring the family dynamic is particularly important in effectively engaging with clients and promoting overall health, stability, and well-being for adolescents and their parents. Although family traditionalism, family cohesion, and parental involvement have been protective for Latino's in other studies, examining the impact of these processes together in a mediational framework may provide a deeper understanding of culture and its influence on family functioning, development, and substance use.

From a micro perspective, adolescent development is marked by significant physical and neurobiological growth and is worthy of attention and intervention given youth's vulnerability during this phase. As well, understanding the processes that operate within a youth's family system may help social workers better recognize how to serve and communicate within and among those systems. In this vein, conceptualizing culture and capturing the nuances of a particular culture may allow for the specification of direct service provision that is in the best interest of family well being. This may also contribute to sustainable prevention efforts that contribute to healthy adolescent development and family functioning throughout the lifecourse.

Findings from this study may also have implications on the meso level for school social workers, community organizers, and local agencies (food banks, community groups, etc) in their direct workings with Latino youth and their families. Having an understanding of the local ethnic minority group culture, in this case Latino culture, may allow meso social workers to tailor their service delivery approach in a culturally knowledgeable manner. Additionally, this culturally grounded community stance may help to engage communities affected by high poverty, crime, and substance use to participate in the intervention change process. Furthermore, comprehensive culturally relevant approaches that include a community presence in the development of research protocols may also help promote sustainable preventions and interventions along with building social and community capital.

At a grander macro level, there are implications for policy change, wide scale prevention efforts, advocacy, program development, program testing, and social work

education. Educating the social service delivery system on how best to meet the needs of the Latino population is going to be critical over the next few decades considering their projected growth. Preparing social workers in classroom settings may promote the use of the most effective interventions and preventions, assist in building additional study protocols, and aid in the future development of evidence based practices for prevention with Latino adolescents.

Social workers can improve their practice with research that is current and reflective of the complex family, cultural, and developmental factors that contribute to adolescent problem behavior. The need to examine the critical developmental period of adolescence in vulnerable populations, such as Latino groups, and the corresponding cultural nuances that influence families is key to creating new research and moving the field forward with the most accurate and rigorous knowledge. Having precise models of complex relationships can help inform prevention programming in determining the specific variables to identify and intervene and in doing so may promote effective use of resources, staff, and funding dollars.

Innovation

The data used in this study (Marsiglia et al., in press) contain a variety of measures that capture influential familial (family cohesion, and parental involvement) and cultural processes (family traditionalism). Few studies have investigated the impact of family traditional norms and family cohesion on parent involvement and Latino youth substance together in a mediational framework. This proposed study might provide more understanding into specific cultural and familial mechanisms and their influence on

Latino youth substance use. For instance, the hypothesized model in this study accounts for the previously understudied effects of culture, family functioning, and acculturation on adolescent substance use. Further, this study is theoretically grounded in ecodevelopmental theory, which is especially salient for ethnic minority populations.

The inclusion of family processes and culture in this work may assist in the elucidation of mediating and moderating processes specific to youth substance use (Castro et al., 2006). The next chapter provides an overview of the research that has been done, specific to the aims of the current study. Chapter's 3, 4, and 5 present the study methodology, results, and discussion of findings.

CHAPTER 2

LITERATURE REVIEW

Between 2000 and 2010, Latino's accounted for more than half of the total population increase and now represent 16 percent (17.6 million children) of the total U.S. population (U.S. Census Bureau, 2010). Nationally it is expected that this growth will continue and by 2050, it is estimated that Latino origin children will comprise about 36 percent of the total U.S. population (Murphey, Guzman, & Torres, 2014; U.S. Census Bureau, 2010). Currently, the Latino population is relatively young compared to other ethnic groups (40% are < age 19) and are largely concentrated in the southwestern U.S. (U.S. Census, 2010). Today, 1 in 4 children is Hispanic and will rise to 1 in 3 by 2050 (Murphey et al., 2014). Overall, the percentage of Latino children in the U.S. has more than doubled over the past 20 years (Murphey et al., 2014). Further, more than half of U.S. Hispanic children have at least one foreign-born parent and seven in 10 Hispanic/Children are of Mexican origin (Murphey et al., 2014).

The demographic makeup along with projections over the next few decades has important implications for the Latino population, specifically in the area of substance use. Among ethnic minorities, Latino's are disproportionately affected by long-term health, social, and economic outcomes resulting from substance use. These negative outcomes associated with substance use are projected to go up over the next decades given the current rates of substance use and projected growth in the Latino population (SAMHSA, 2011). In Arizona alone, eighth grade youth report higher earlier illicit drug use initiation rates (34.7%) compared to the national average (19.6%), with Latino youth reporting the

highest lifetime, past 30 day, and past two-week alcohol use rates when compared to their peers statewide (CSAP, 2009). These, early substance use rates, which are also high nationally, are troubling given the various deleterious outcomes that can result from substance use. In the context of ethnic minority health, substance use is one of the largest contributors to health disparities in the Latino population (SAMHSA, 2011).

Health disparities are defined as differences in morbidity, mortality, and access to health care among populations that are defined by specific factors including poverty/socioeconomic status, race/ethnicity and gender (Isaac, 2012). Health disparities pose a significant public health concern (Koh et al., 2010), particularly in ethnic minority populations. Due to the adverse cost that substance use has on individuals, families, and society, it is critical that researchers and practitioners identify the key risk and protective factors that are associated with substance use as early as possible (Van Wormer & Davis, 2013). Although several cultural and familial processes have been identified in the literature as serving a protective or risk function specific to adolescent substance use (e.g., familismo, acculturation, family functioning), more research is needed on the pathways in which those processes operate. First, in order to identify how these processes impact adolescent youth substance use, recognizing the epidemiological findings and trends in substance use for youth as well as understanding the developmental context is critical. The next section provides an overview of the epidemiological findings specific to Latino adolescent substance use with a discussion on the deleterious impact of substance use from a developmental and neurobiological perspective.

Substance Use Epidemiology and Trends

In the U.S., three specific studies routinely collect data from youth and provide government agencies with information on substance use and substance use trends. Nationally representative, these studies include the *Monitoring the Future Study (MTF)*, the *Youth Risk Behavior Survey (YRBS)*, and the *National Survey on Drug Use and Health (NSDUH).* The MTF study, funded by the National Institute on Drug Abuse (NIDA), had been conducted annually since 1975 and measures frequency (past 30-day, annual, lifetime use) on a variety of different substances as well as perceived risk of substance use, perceived availability, and belief and attitudes towards substance use (Johnston et al., 2013; Johnston et al., 2014).

The YRBS is a national school-based survey conducted by the Centers for Disease Control and Prevention (CDC) every two years among high school youth grades 9 through 12; data on alcohol and other drug use as well as tobacco use are collected (Kann et al., 2014). Finally, the NSDUH, administered by the Substance Abuse and Mental Health Services Administration (SAMHSA), is an annual national representative survey that has been conducted since 1971 (SAMHSA, 2014). This particular survey, which differs from the previously two mentioned studies as it is not school-based, collects data on rates of substance use (e.g. alcohol, tobacco, and illicit drugs) among individuals ages twelve and older. These three studies provide the context for this study regarding trends in substance use for Latino youth.

Findings from the MTF, YRBS, and NHSDUH

Over the past twenty years, gradual decreases in alcohol and cigarette use have been observed among youth in general, although marijuana use has increased in recent years, particularly among Latino adolescents (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2014). In 2013, nearly 12 percent of adolescents aged 12-17 were current alcohol users and nine percent were current illicit drug users. More than half of the adolescents who were current alcohol users reported past month binge drinking (SAMHSA, 2014).

Despite historic lows in adolescent alcohol use as reported in the most recent MTF study, a large percentage of Latino youth continue to engage in alcohol use and are initiating drug use at an earlier age than in the past (Johnston et al., 2013; Johnston et al., 2014). Although alcohol rates have declined among White, African American, and Latino youth, eighth grade Latino students continue to report the highest drinking rates (Kann et al., 2014; Johnston et al., 2014) as well as the highest percentage of consuming alcohol before the age of thirteen (Kann et al., 2014). As well, Latino's had the highest rate of binge drinking in eighth grade, highest rate of having ever smoked cigarettes, and highest rate of marijuana before age 13 compared to their White and African American peers (Kann et al., 2014; Johnston et al., 2014). In Arizona specifically, eighth grade Latino youth report higher earlier illicit drug use initiation rates compared to the national average in addition to the highest lifetime, past 30 day, and past two-week alcohol use rates compared to their peers statewide (CSAP, 2009).

Long-term Effects of Early Substance Use

National and state youth substance use rates are disconcerting. Early substance use (<15 years of age) places youth at an increased risk for using harder drugs, experiencing negative health and social outcomes including increased representation in the judicial system, delayed cognitive growth, lower academic achievement, and higher likelihood of developing substance dependence/addiction both in later adolescence (between the ages 15-18) and early adulthood (between the ages 18-22**)** (Bonnie & O'Connell, 2004; Ellikson, Hays, & Bell, 1992; Ellickson & Morton, 1999; Flory, Lynam, Milich, Leukefeld, & Clayton, 2004; Kessler, et al., 2005; Miller et al., 2007; Newcomb & Bentler, 1986).

Transitioning from initial substance use initiation to regular substance use typically occurs within 3 years, which in turn heightens the risk for negative long term social, behavioral, and health outcomes (SAMHSA, 2014; Wittchen et al., 2008). A recent SAMHSA study using the Treatment Episode Data Set (TEDS), found that individuals who began using drugs in early and late adolescence had a much higher likelihood of abusing other drugs and developing mental health disorders (SAMHSA, 2014). Further, substance use increases the risk for cardiovascular disease, stroke, cancer, and lung disease (National Institute on Drug Abuse, 2012). In 2009, alcohol, tobacco, and other drugs were contributors to half of the top ten national leading causes of death and seven of the top ten leading causes of death among Latinos in Arizona (CSAP, 2009; Kochanek, Xu, Murphy, Minino, & Kung, 2011).

Alcohol use. Globally, alcohol misuse is the fifth leading risk factor for early death and is the first among people ages 15-49 (Lim et al., 2010; National Institute on Alcoholism and Alcohol Abuse, 2014). Drinking alcohol during adolescence can have a detrimental and long-term impact on the developing brain, particularly on decision making related to risk taking (FASEB, 2014). Physically, the negative health impacts of alcohol include liver disease, cirrhosis of the liver, cancer, stroke, and early death (NIAAA, 2014; National Institute on Drug Abuse, 2012). As well, individuals that begin drinking at an early age are more likely to abuse alcohol in adulthood; individuals who drink to intoxication earlier in life are at an increased risk for continued heavy drinking compared to individuals who drank but did not become intoxicated (Morean et al., 2014).

Cigarette use. Cigarette use typically begins in adolescence and is the leading cause of preventable disease in the U.S. (Johnston et al., 2014). Currently, more than 480,000 people die each year in the U.S. from cigarette smoking. Smoking cigarettes is estimated to increase the risk for heart disease, stroke, and lung cancer as well as diminished overall health and increases in health care utilization (CDC, 2014). Furthermore, cigarette smoking has a detrimental effect on every organ in the body and is associated with higher incidences of respiratory and cardiovascular disease. Not smoking or quitting smoking lowers the risk for the aforementioned outcomes and can also increase longevity (CDC, 2014).

Marijuana use. In a recent review of the literature surrounding the detrimental health effects of marijuana, Volkow and colleagues (2014) found short-term marijuana use to be associated with impaired short-term memory, suppressed ability to make

judgments (i.e., sexual risk taking), as well as psychosis and paranoia for individuals who were long-term marijuana users. Long-term effects associated with early marijuana use included altered brain development, addiction, low educational outcomes, and higher likelihood of psychotic disorders (Volkow, Baler, Compton, & Weiss, 2014).

In a separate review of the literature on acute and chronic marijuana use over the past two decades, it was found that driving while high on marijuana doubled the risk for car crash, which increased substantially in combination with alcohol. Marijuana users were also found to have lower educational outcomes compared to their non-using peers. Similar to Volkow and colleagues' (2014) findings, adolescent marijuana use doubled the risk for schizophrenia diagnoses or other psychotic symptoms in adulthood (Hall, 2014).

The Value of Prevention

In addition to the negative social and public health consequences associated with substance use, the economic outcomes are equally concerning. Substance use related outcomes cost American taxpayers over $500 billion dollars per year, with incarceration, lost productivity, education, and health care incurring the greatest expenses (Miller & Hendrie, 2008; Miller & Hendrie, 2009). Problems associated with alcohol, the most commonly used substance, alone costs the U.S more than 220 billion dollars a year (NIAAA, 2014). Prevention efforts that target Latino youth in particular are therefore critical in mitigating health disparities in this population as well as saving limited public health resources and monies (Prado & Pantin, 2011; SAMHSA, 2011). For example, every dollar invested into prevention yields two to ten dollars in savings in the areas of health, legal, and education costs over time (SAMHSA, 2011).

Prevention is especially important in states that have Latino populations exceeding 50 percent of the total state population such as Arizona, California, and New Mexico (Murphey et al., 2014). Given the heterogeneity between and within Latino sub groups, more understanding is needed on the role that key cultural, familial, and developmental processes have on adolescent behavior, which can help inform prevention programming targeting at-risk Latino youth (Cervantes et al., 2011). The next section provides the developmental context for adolescent youth, specifically focusing on brain development as it relates to healthy youth functioning and risk taking. Thereafter, discussion on the research literature surrounding the socio-cultural and familial processes that are the focus of this dissertation study will be explored in further depth.

Adolescent Development

Adolescence marks the beginning of puberty and consists of many changes across biological, emotional, cognitive, and social domains (Ashford, Lecroy, & Lortie, 2006; Feldman, 2008). Incorporating the developmental context into the conceptualization of adolescent problem behavior can provide key insight into why youth are at-risk for substance use and other risk behaviors. Adolescence, a period of development made up of early (ages 10-13), middle (ages 14-17), and late adolescence (ages 18-22) (Feldman, 2008), involves significant physiological growth and social maturation.

Early adolescence (ages 10-13) in particular, is marked by significant biological, cognitive, social, and personality changes. Early adolescence, the focus of the current study, can be a turbulent period of time given the growth curve and can make youth vulnerable to substance use. Study with this population at this age is therefore critical in

preventing or delaying substance use. Biologically, physical growth in height and weight, sexual maturation, as well as changes to internal/cognitive functioning occur during early adolescence (Feldman, 2008). Cognitive development involves advances in intellectual capabilities, while social and personality development includes changes in interpersonal interactions with family and peers and an increasing trend towards independence (Ashford et al., 2006; Feldman, 2008). Most importantly, significant development occurs in the brain during this developmental period and has substantive implications for cognitive functioning, decision-making, and risk behavior.

Brain Development and Cognitive Functioning

Youth susceptibility to negative influences is concerning from both biological and social perspectives. Cognitive processes have a direct impact on the behavior of a developing adolescent during this key maturation phase. Substance use during adolescence can have substantial and long lasting effects on the brain specific to information processing, communication, complex thought processes, as well as decision making abilities (Feldman, 2008; McKenzie, 2008). Further, the adolescent brain is functionally and structurally different than the adult brain, which makes youth particularly susceptible to impulsive decision making and engaging in risky behavior (Luciana, 2010).

The period of adolescence through late adolescence involves rapid brain development and has critical implications for healthy executive functioning, which is responsible for regulating sensory perceptions, short-term memory, language, future goal orientation, motor skills, and self-regulation (Blakemore & Choudhury, 2006; Pokhrel et

al., 2013). Self-regulation refers to the regulation of emotions, thoughts, and behavior to achieve a particular outcome or goal (Gestsdottir and Lerner, 2007). Research has found that adolescents who exhibit poor self-regulation are at an increased risk for substance use (Steinberg, 2010).

Specific to alcohol, research has found early alcohol consumption concurrently interferes with healthy brain development while predicting a higher likelihood of adolescent youth developing an alcohol use disorder throughout life (NIAAA, 2006). Such early alcohol use has been shown to negatively impact the prefrontal cortex region of the brain. Specifically, the myelin coating in this region, the substance responsible for insulating neuronal connections, controlling impulses, and making decisions, is reduced in those early heavy drinkers (Blakemore & Choudhury, 2006). These reductions in mass and thickness are thought to continually impact the brain negatively even after drinking has stopped (Society for Neuroscience, 2014).

Equally harmful to the brain is cigarette use. A recent study found that cigarette smoking among young people contributed to changes in brain structure, even among individuals that did not have a long history of smoking (Morales, Ghahremani, Kohno, Hellemann, & London, 2014). Further, individuals who were regular smokers had lower overall IQ, memory processing speed, and abstract reasoning compared to those who were not smokers in another study (Fried, Watkinson, & Gray, (2006). Regarding marijuana, the American Psychological Association recently reported that frequent marijuana use can have a negative impact on adolescent brain functioning and can lead to cognitive decline, poor attention, and problems with memory (APA, 2014).

Brain development and risk taking. The central nervous system, which consists of the brain and spinal cord, is a critical system that is responsible for individual functioning. During adolescence, rapid development in the brain and nervous system takes place. The brain specifically is made up of nerve cells called neurons, which communicate information at extremely fast rates through neurotransmitters across gaps in the brain known as synapses, the spaces in between neurons (Ashford, Lecroy, & Lortie, 2006; Feldman, 2008; Van Wormer & Davis, 2013). This communication is assisted greatly through a process known as myelination were nerve cells become insulated by fat cells in order to make them more efficient in the transmission of neural messages (Blakemore & Choudbury, 2006; Luciana, 2010).

Neuronal connections that are used most frequently become stronger while the neuronal connections that are not used frequently become weaker and eventually stop firing all together. Through a process called synaptic pruning, or synaptogenesis, the areas of the brain not routinely used are deemed unnecessary for functioning or survival (Blakemore & Choudhury, 2006; Feldman, 2008). These unused areas are thus cut back in mass and volume over time. Synaptic pruning often occurs in the regions of the brain charged with important processes related to higher order executive thinking, decision making, and abstract reasoning (Blakemore & Choudhury, 2006; Luciana, 2010).

Aside from pruning to synapses, a second important process occurring in the brain during early adolescence is the pruning of grey matter. Overall, grey matter is responsible for storing knowledge then retrieving that knowledge to detect and then act on a stimulus (Blakemore & Choudbury, 2006; Luciana, 2010). Pruning of grey matter as well has

implications for the development of the myelin sheath surrounding the neurons themselves.

Beginning at birth, synaptic pruning helps to increase the efficacy and speed of the brain by removing connections that are not critical (Blakemore & Choudhury, 2006; Feldman, 2008). Synaptic pruning gives individuals more efficiency in their cognitive capabilities such as increased speed of cognitive functioning, and enhanced development of complex thinking (Luciana, 2010). Pruning as well directly affects the amount and type of neurotransmitters produced: the most used brain circuits become stronger, while the ones not used become weaker (Blakemore & Choudhury, 2006). When adolescents use substances during this developmentally vulnerable period, the chemical composition of the brain may be altered, resulting in overall negative impacts on cognitive functioning and processing throughout the lifecourse (Van Wormer & Davis, 2013).

Prefontal Cortex and Decision Making. As neurons grow they reposition themselves in different regions of the brain known as the cortexes. Two cortexes in the brain, the prefrontal and parietal cortex, are responsible for executive functions such as selective attention, memory, ability to carry out multiple tasks, and inhibition (Blakemore & Choudhury, 2006; Luciana, 2010). The prefrontal cortex, responsible for decision-making and impulse control, goes through substantial development during adolescence (Feldman, 2008; Luciana, 2010) and is not fully developed until one is between 20 and 25 years of age (Ashford et al., 2006; Feldman, 2008).

Since cognitive abilities are reliant on the functioning of these important brain regions, poor decision making in adolescence has been associated with the lack of fully

developed brain circuitry (Luciana, 2010). Considering that the full development of decision-making capacity does not occur until one is between the ages of 20 and 25, early adolescent youth are thought to be at a higher risk for engaging in poor or unhealthy decisions such as substance use or risky sexual behavior. The relationship between substance use risk and neurocognitive growth suggests that adolescents tend to experience a rise in novelty and sensation seeking behavior, greater impulsivity, and low inhibitory control during adolescence (Pokhrel et al., 2013; Spear, 2010).

Although youth are considered vulnerable to substance use and other risky behavior, socio-cultural factors and family functioning can be protective for youth against substance use. Research specific to Latino early adolescents and their risk for drug use must therefore explore the familial domain given the prominent influence that the family has on Latino youth behavior.

Adolescence: An Evolving Period

The disproportionately high rates of Latino adolescent drug use, the projected growth of the Latino population, and the anticipated need for prevention/ intervention resources highlights the need for research that examines how specific socio-cultural mechanisms interact with Latino adolescent developmental and familial processes in preventing or delaying substance use. Socially, youth begin to establish independence and "relative autonomy" from their primary family and begin to have an increased investment emotionally in relationships away from the family (McKenzie, 2008, p.112). Youth develop a stronger self-identity and desire more independence, which is particularly influenced by their relationships with family and peers (Feldman, 2008;

McKenzie, 2008). This emotional investment happens mostly with peers since youth place heavy weight on peer support and acceptance during this age.

Peer relationships that are built during adolescence play a large role in the shaping of identity for youth (Erikson, 1968) and as a result, can make adolescent youth especially vulnerable to negative social influences, such as peer pressure for substance use (Feldman, 2008; McKenzie, 2008; Guo, Hill, Hawkins, Catalano, & Abbott, 2002; Kosterman, Hawkins, Guo, Catalano, Abbott, 2000). Although adolescent youth have a larger emotional investment into peer relationships as a result of the support they provide, parents still have a greater influence on their children's behavior, norms and attitudes. Parents can therefore act as a key social support system that promotes positive development and resiliency in youth (De La Rosa & White, 2001; Fitzpatrick, Wright, Piko, & LaGory, 2005).

Conversely, poor family functioning places youth at risk for substance use, which together significantly threaten healthy adolescent brain development, the parent-child relationship, and "regulation of emotion and behavior" (Masten, 2001, p.234). The social and biological developmental context for adolescent youth provides an understanding of the interplay between risk and protective processes specific to behavior. For Latino youth, recognizing the impact that culture has on family functioning and youth behavior is critical in acknowledging the specific pathways in which said processes influence health risk behavior (Prado, Szapocznik, Maldonado-Molina, Schwart, & Pantin, 2008).

Culture in Latino Populations

Latino's are the largest and fastest growing racial/ethnic minority group in the U.S. (U.S. Census Bureau, 2010; Murphey et al., 2014; Ramirez & de la Cruz, 2003). However, our understanding of cultural strengths with this group is limited (Murphey et al., 2014). Culture conceptualized as "a set of practices and behaviors defined by customs, habits, language, and geography that groups of individuals share" (Napier et al., 2014, p.3), is infused into the fabric of everyday living for many Latino families and plays a significant role in family communication and functioning.

Culture is a complex, multifaceted, and constantly evolving process that can influence adolescent behavior and development in both positive and negative ways (Castro & Alarcon, 2002), especially since Latino cultural values are embedded in Latino youth upbringing (Azmitia & Brown, 2002; Lorenzo-Blanco, Unger, Ritt-Olson, Soto, & Baezconde-Garbanati, 2013). Moreover, parenting practices in Latino families are thought to be the strongest channels for cultural knowledge as they "provide the most interpersonally intimate transmission of culture" (Koss-Chioino & Vargas, 1999, p.47).

Within the Latino substance use literature, several cultural constructs have been identified and typically embedded in interpersonal relationships. In Latino families, culture is intertwined with interpersonal processes and can have an influence on the quality of relationships between family members as well as those outside of the family. Cultural constructs specific to interpersonal processes within the Latino family include familismo (family pride and support), respeto (respect and deference to elders), personalismo, simpatia (relating to others and a harmonious way), confianza

(trustworthiness and interpersonal trust), and orgullo (pride and dignity) (Castro & Alarcon, 2002; Castro et al, 2006; Halgunseth, Ispa, & Rudy, 2006).

As well, constructs such as acculturation, machismo (male gender role), marianismo (female gender role), spirituality, and family traditionalism are also related to interpersonal relationships and have an impact on the family internally (Castro & Alarcon, 2002). The relationship between culture and health is particularly salient with Latino populations in the Southwest due to the current and historical context of the people that have resided there for many generations as well as those who have migrated from Mexico.

Culture and risk in Latino youth. Cultural traditions in particular may cultivate a strong sense of cultural and ethnic identity and may protect against substance use while encouraging positive academic and psychological outcomes. Cultural identity is especially salient for recent immigrant youth and is a key contributor to resilience in this population (Cardoso & Thompson, 2010). Latino cultural values, which are different compared to American culture, may have a differential effect on familial and behavioral outcomes and examining the direct and indirect effects of cultural processes on family functioning and youth substance use can help inform programmatic, clinical, and policy efforts specific to Latino youth and families (Prado et al., 2008). Further, identifying the key cultural strengths is especially important considering the risk factors that Latino youth face (Cox, Burr, Blow, & Parra Cardona, 2011).

Apart from being at risk for substance use, two thirds of Latino children live in poverty or in low-income households and continue to make up 34% of the high school

drop out rate, which is the highest nationally (Murphey et al., 2014). Among Latino dropouts, the highest proportion are immigrants, with foreign-born youth making up almost 21 percent of the total drop out population (Murphey et al., 2014). The obstacles that Latino youth face in the classroom and in society at large are further exacerbated when youth initiate substance use at an early age. In an examination of the research and practice literature relating to the relationship between culture and health and health practices, Napier and colleagues (2014) highlighted the critical "need to understand the relation between culture and health, especially the cultural factors that affect health improving behaviors" (Napier et al., 2014, p.1).

Role of Family in Latino Populations

Familial relationships are the most important proximal processes for adolescents (Szapozcnik & Williams, 2000). From a young age, youth are taught that their sense of self and self value is directly connected to the family (Bornstein, 2002; Feldman, 2008). This strong identification with the family, often referred to as familism and/or familismo, is considered to be one of the most impactful protective factors for Latino youth against substance use and developing problem behavior (Castro et al., 2006; Coatsworth et al., 2002a; Cox et al., 2011; Marsiglia et al., 2002; Cooley, 2001 as cited in Smokowski, Rose, & Bacallao, 2008; Santisteban, Coatsworth, Briones, Kurtines, & Szapocznik, 2012; Updegraff, Umana-Taylor, Mchale, Wheeler, Perez-Brena, 2012). Thus, strengthening the family may be an important preventive measure against substance use for Latino youth.

Familial support, often operationalized as family cohesion and parental involvement, may foster positive parent child relationships and promote resiliency in youth. As well, family cohesion and parental involvement may as well help shape prosocial behavior among youth (Pantin et al., 2003b), which is fundamental in the later development of adult behaviors that are positive and conducive to health and wellbeing (Repetti, Taylor, & Seeman, 2002). For example, research has found familial support to be associated with lower level of deviant peer influence (Frauenglass, Routh, Pantin, & Mason, 1997), a risk factor for substance use, while low family bonding has been found to increase the likelihood of substance use initiation (Guo et al., 2002). Parents therefore that encourage and guide youth in their developmental maturation may help them better adapt to the tumultuous social and life changes that occur during adolescence. In Latino families, this family support is often conceptualized as familismo, or familism, and is important to understand given its influence on Latino family functioning, youth development, and risk for unhealthy behaviors.

Familismo

Familismo, a multifaceted construct, is defined as having a strong identification, loyalty, and attachment to the nuclear and extended family and is highly valued among Mexican-origin families (Livas-Stein, Garcia-Coll, Huq, 2012; Marin, 1993). Familismo can also be characterized as connection and sense of duty or obligation to help and support the family (Cox et al., 2011) and is thought to result in youth having greater respect towards their parents and fewer problem behaviors (Livas-Stein et al., 2012; Fulligni, Tseng, & Lam, 1999; Lugo Steidel & Contreras, 2003).

Familismo includes values and behaviors such as strong traditional conservative family values, collective solidarity, family pride, and family support (Sabogal, Marin, Otero-Sabogal, VanOss-Marin, & Perez-Stable, 1987; Udpegraff, McHale, Whiteman, Thayer, & Delgado, 2005; Van Wormer & Davis, 2013). Demographic characteristics of familismo in Latino populations include a large nuclear and extended family, close family structure, multigenerational household composition, as well as frequent and consistent family contact (Baca-Zinn, 1994; Harwood et al., 2002).

Although several studies have examined the influence of familismo on family processes and youth risk behavior, more studies are needed that investigate the causal pathways of specific facets that make up familismo. This need is highlighted further since many studies have defined familismo in different ways. For example, studies have defined familismo as attitudes towards the family and family obligations (Fulligni, Tseng, & Lam, 1999; Sabogal et al., 1987), strong family orientation (Santisteban et al., 2012), and connectedness to one's own family (Shih, Miles, Tucker, Zhou, & D'Amico, 2012). Although the notions family cohesion and family traditionalism are implied in the definition of familismo, no studies were found that tested statistically whether family traditionalism and family cohesion indeed are main indicators of familismo.

Given the importance of familismo in Latino populations, identifying the causal pathways of specific cultural and familial variables that make up this construct can help elucidate the mechanisms through which said processes protect or put youth at risk for substance use. A study by Fulligni and colleagues (1999) examined the salience of familismo, conceptualized as the attitudes towards family obligations, in a sample of first,

second, and third generation Latino 10th (*M* age = 15.7 years) and 12th (*M* age = 17.7 years) grade youth (*N* = 800) from northern California. Using three-way Analysis of Variance (ANOVA), they found that regardless of generation, Latino adolescents reported "stronger values and greater expectations regarding their duty to assist, respect, and support their families" compared to their European peers (Fulligni et al., 1999, p.1040). Although differences of familismo were large and consistent across generation, socioeconomic background, gender, and family composition in Fulligni et al.'s (1999) study, this particular study was limited due to the low number of Latino adolescents (*N* = 120) and cross sectional design.

In a similar study, Sabrogal et al. (1987) explored the dimensions that make up familism, defined as attitudes towards the family (family obligations, perceived family support, family as referents), and investigated the effects of acculturation on familism in a sample of Latino's (*N* = 452). Using both one way Multivariate Analysis of Variance (MANOVA) and one way ANOVA, they found that Latino's reported greater familism compared to White non-Latinos (*N* = 227). As well, Mexican, Cuban, and Central-American Latino sub-groups reported similar familism attitudes. Although familism decreased for more acculturated Latino's, they still reported more familistic values compared to White non-Hispanics in the sample. Despite establishing a measure that has been used in subsequent studies, a limitation of Sabrogal et al.'s (1987) study was the measurement of familismo and cross sectional design.

In a recent study exploring the impact of culture, family factors, and discrimination on smoking initiation risk in a sample of Mexican-American ninth and

eleventh grade youth from Southern California (*N* = 1,436; *M* age = 13.97 years), Lorenzo-Blanco and colleagues (2013) found an association between familismo, lower family conflict, and increased family cohesion in their multigroup structural equation analysis (SEM). Familismo was defined as the likelihood of youth to engage in family oriented behaviors. It was found that enculturation, "the process by which Latino youth learn about and engage in their Latino cultural practices, values and identifications" (Lorenzo-Blanco et al., 2013, p.957), was associated with higher familismo and respeto.

As well, an unexpected outcome however was the association between acculturation and greater familismo; this may be suggest that parents teach their children about the importance and purpose of the family and may in fact protect them from the negative effects of substance use (Lorenzo-Blanco et al., 2013). In a similar study, Lorenzo-Blanco, Unger, Baezconde-Garbanati, Olson, and Soto (2012) examined the influence of culture (familismo, respeto, fatalism, and traditional gender roles) and family factors on depressive symptoms in a large sample of Latino ninth and eleventh grade youth (*N* = 1,922) from Southern California. Using multigroup SEM, Latino cultural values were associated with family cohesion and family conflict, however the strength of these associations varied depending on gender and cultural values. Familismo, defined the same as in Lorenzo-Blanco et al.'s (2013) study, was inversely associated with family conflict and positively associated with family cohesion, although the effect of familismo was stronger for girls.

Using SEM analyses, Santisteban and colleagues (2012) examined key family processes such as familismo and parenting practices as mediators of acculturation on

adolescent problem behavior among middle school Latino early adolescents and their primary caregiver (N = 167). Although familismo, defined as orientation to the family, was not found to be a significant mediator, significant indirect effects were detected between familismo and externalizing problem behaviors through parenting practices. Familismo was positively associated with successful parenting and may suggest "that the "value" of familism may be associated with the implementation of specific and successful parenting practices" (Santisteban et al., 2012, p.479). In a longitudinal study looking at the relationship between culture (parent respect and familism) and alcohol initiation, Shih and colleagues (2012) did not find any significant effects between familism and alcohol initiation. There were also no racial/ethnic differences found in the relationship between familism and alcohol initiation (Shih et al., 2012) in the study's sample of middle school youth (N = 6,054; 57% Latino).

Limitations of Previous Research

A limitation of previous studies investigating the effects of familismo has been the cross sectional design, sample size (Fulligni et al., 1999; Santisteban et al., 2012), and varied operationalization of familismo. Some researchers have operationalized familismo as family obligations, perceived support from family, or family as referents (Lorenzo-Blanco et al., 2012; Lorenzo-Blanco et al., 2013; Sabogal et al., 1987) while others have defined it as duty to assist, respect, and support families (Fulligni et al., 1999). Familismo is multidimensional concept and has not been fully captured in previous research and limits the measurement of familismo. For example, familismo was measured (Lorenzo-Blanco et al., 2012; Lorenzo-Blanco et al., 2013) using items from Sabogal et al.'s (1987)

familismo scale as well as Cuellar et al.'s (1995) familismo scale. Although Sabogal's study established a reliable familismo measure that has been used in subsequent studies, it does not capture other elements that makeup familismo such as family traditionalism and family cohesion. Other measures of familismo have the same limitation (Lorenzo-Blanco et al., 2012; Lorenzo-Blanco et al., 2013; Santisteban et al., 2012) especially based on the definition of familismo that is provided in the literature.

Despite limitations in the conceptualization and measurement of familismo, some strengths of previous studies was the use of multivariate modeling to test key pathways of cultural and familial variables (Lorenzo-Blanco et al., 2012; Lorezno-Blanco et al., 2013; Santisteban et al., 2012). Although familismo has been found to be an important cultural value in Latino families, more longitudinal studies are needed that examine other facets of familismo and how they impact family functioning and youth behavior.

Family cohesion and family traditionalism are indicated in the definition of familismo, however no studies were found that explored statistically whether or not these variables make up familismo. It is argued that traditional family norms specifically, which refer to conservative beliefs, attitudes, and values, are an important part of Latino family culture (Castro & Gutierres, 1997) and help shape and influence familismo. Family traditionalism may have a direct impact on how one views what the role and meaning of family is. Given that families are the main transmitter of cultural and behavioral values to youth (Hepworth et al., 2013; Prado et al., 2008), families that have a greater sense of family traditionalism may result in increased cohesiveness, parent

involvement (Castro et al., 2007), and lower substance use (Castro et al., 2007; Castro & Hernandez-Alarcon, 2002; Coatsworth et al., 2002a).

Family Traditionalism

Culture is critical to the cognitive and social development of youth (Marsiglia et al., 2009), informs the way that Latino families function, shapes how they see the world, and is expressed through "language, religious beliefs, nationality, and family heritage" (Castro & Hernandez-Alarcon, 2002, pg. 789). Traditional Latino families who uphold a strong family management structure and have strong family values are thought to protect against substance use (Gil et al., 1998; Castro et al., 2006; Holley et al., 2006; Turner et al., 2006; Vega & Gil, 1998; Warner et al., 2008; Zapata, Katims, and Yin, 1998). The transmission of traditional cultural norms to youth may differ however depending on the geographical context (e.g., region, city, neighborhood), amount of time spent living in the U.S., and the degree to which both parents and youth are acculturated to American culture (Castro et al., 2007).

In a study by Castro and colleagues (2007), the relationship between familism, orientation to Latino and American culture, and family traditionalism was explored using zero order correlations and regression analysis in a sample of Mexican children ($N = 23$) of illicit drug users (i.e., marijuana and/or methamphetamine) in the Southwest. Orientation to Latino culture was significantly associated with familism, defined as level of connectedness to family and parents (family bonding). In a separate regression analysis, family traditionalism was significantly correlated with familism, suggesting that higher traditional Latino family values and greater attitudes were associated with greater

family connectedness. A subsequent study by Castro Stein, & Bentler (2009) investigated the influence of traditional family norms, ethnic pride, and acculturation on cigarette smoking and alcohol use among a sample of Latino adolescents (N = 945). They found that traditional family values had an indirect effect, through self-efficacy and perceived benefits of smoking on less cigarette and alcohol use.

Although no significant indirect effects were detected between family traditionalism and alcohol/cigarette use through avoidance self efficacy (i.e., perceived capability for avoiding alcohol or cigarette use), family traditional norms were inversely and significantly associated with acculturation. A strength of this study was the use of previously validated and reliable measures as well as the use of multivariate modeling to examine in more depth the pathways of specific cultural variables on substance use (Castro et al., 2009).

A separate study using SEM to examine the effect of maternal nativity status and traditional cultural values on externalizing behaviors and academic achievement in a sample of seventh Mexican origin students found that both Mexican and Anglo cultural orientations were significantly associated with traditional cultural values (Gonzales and colleagues, 2008). Traditional cultural values (e.g., family support and emotional closeness, family obligations, and religion) was associated with less externalizing behaviors and increased engagement in school and was also the strongest predictor of key outcomes in this particular study.

The protective effect of traditional cultural values on externalizing outcomes for adolescents in this study may be partially explained by orientation to Mexican culture.

Orientation to Mexican culture may help in the maintenance of traditional cultural values among youth and influence how they function within as well as how they view the family. A strength to make note of in this study was the measurement of cultural values using a 63-item scale, which assessed the underlying value dimensions that are embedded in the processes of acculturation and enculturation. Although this measure differs from the one used by Castro and colleagues in other studies, it provides further insight into traditional Mexican cultural values and captures them in the context of the acculturation processes specific to Latino and American culture.

The findings of previous studies suggest that family traditional values and norms have a substantive influence on familial processes, adolescent substance use, and school outcomes (Castro et al., 2007; Castro et al., 2009; Gil et al., 2000; Gonzales et al., 2008). Studies by Castro et al. (2007, 2009) and Gonzales et al. (2008) have provided further understanding regarding the influence of traditional family values, however they are limited due to their cross sectional design as well as the reliability issues with the traditionalism measures (Castro et al., 2007, .α = 69; Gonzales et al., 2008, α =.67 for family support and α =.65 for family obligations). Additionally, Castro and colleagues' (2007) sample size and limited definition of familism (Castro et al., 2009) were also limitations.

Despite some studies finding low levels of familism and loss of traditional family values to be associated with increased substance use among Latino youth (Felix-Ortiz, Fernandez, & Newcomb, 1998; Gil et al., 1998; Turner et al., 2006; Vega & Gil, 1998), more studies are needed that explore the direct and indirect pathways of family

traditionalism on familial and youth behavioral outcomes. Conceptualizing family traditionalism as a component of familismo, which is suggested in the various definitions of familismo (Livas-Stein et al., 2012; Marin, 1993; Sabogal et al., 1987; Udpegraff et al., 2005; Van Wormer & Davis, 2013), may help elucidate the key nuances that lead to healthy family functioning and prosocial youth behavior.

Family Cohesion

Family cohesion is another key process that has significant implications for family functioning and pro social behavior in youth. Family cohesion is an intergenerational process and can be considered a main facet and key indicator of familismo (Behnke et al., 2008; Miranda et al., 2000) as well as a global marker of family functioning (Baer, 2002; Reeb et al., 2015). Family cohesion, which refers to family closeness, structure, beliefs about family (Marsiglia et al., 2009), and the "emotional bond that family members have with one another" (Reeb et al., 2015, p.2), is a frequently cited protective factor for Latino youth against substance use (Deng et al., 2006; Kopak, Chen, Haas, & Gilmore, 2012; Roosa et al., 1996) and may be the most important familial process to investigate and intervene in for Latino youth (Behnke et al., 2008; Kopak et al., 2012). Despite limitations in the family cohesion research in relation to parent involvement and youth substance use, the family cohesion literature is more established compared to the family traditionalism/values literature.

McKeown and colleagues' (1997) cross sectional study examining the impact of family cohesion on child depressive symptoms in a large sample of adolescent youth (N = 3,191) found that lower family cohesion was significantly associated with higher child

depressive symptoms, even after controlling for family structure. Conversely, Wagner et al. (2010) found that living with a single parent was associated with less family cohesion. In a sample of Latino adolescents (N = 149) in the southwest, Marsiglia, Parsai, and Kulis (2009a) found that family cohesion was protective against conduct problems and rule breaking among. In another study by Marsiglia and colleagues (2009b), they found that low and high family cohesion predicted greater alcohol use among a sample of Latino adolescents (N = 120). The finding that cohesion can be protective and risky suggests that there needs to be more balance in family bonding and engagement for youth. For example, high family cohesion may inhibit individual independence while low family cohesion can result in little familial engagement and support by family members (Marsiglia et al., 2009).

Similar to Marsiglia et al.'s (2009) study, Unger, Ritt-Olson, Soto and Baezconde-Garbanati (2009) found that low family cohesion was associated with higher levels of substance use among Latino adolescents. Conversely, Vega and Sribney (2003) found family cohesion to inhibit alcohol and drug use among Latino adolescents. As well, family cohesion has also been found to be both an important predictor and mediator in relationships concerning adolescent health outcomes (Deng et al., 2006; Kopak et al., 2012; Marsiglia et al., 2009; Roosa et al., 1996). For example, Roosa and colleagues (1996) found that family cohesion mediated the effects of problematic family drinking on child conduct disorder and depression in a sample of Latino and White adolescents (N = 169). In a sample of Mexican-American youth, Deng and colleagues (2006) assessed the influence of family cohesion and collective efficacy on substance use outcomes. Family

cohesion mediated the effects of collective efficacy on child internalizing behavior and may have been protective for youth since it provides structure where parents and children can build their relationships and can be a source of shared social support.

In a longitudinal study of Latino adolescents (N = 3,413), Gil, Vega, & Biafora (1998) found family cohesion to be associated with less substance use. The sample however was predominately Cuban and Puerto Rican male youth. As well, a sub scale of family cohesion instead of the FACES was utilized to measure family cohesion, which is a strength of some of the previously discussed studies. Similarly, Kopak and colleagues found family cohesion to be the most important factor in protecting youth (N =2,875) from substance use in their longitudinal study, but measured family cohesion using a scale that was not previously validated.

In other research, Reeb and colleagues (2015) examined prospective differences by race/ethnicity in the effects of family cohesion on alcohol related problems using two waves of data from the National Longitudinal Study of Adolescent to Adult Health. Higher family cohesion was found to predict lower levels of future alcohol use related problems, however, for Latino youth family cohesion was not significantly associated with alcohol related problems (Reeb et al., 2015). Other research has found family cohesion to be significantly associated with less alcohol use (Coker & Borders, 2001; Marshal & Chassin, 2000; Nash, McQueen, & Bray, 2005) and lower depressive symptoms among Mexican-American youth (Lorenzo-Blanco et al., 2012).

The studies that measured family cohesion using the Family Adaptation and Cohesion Evaluation Scales (FACES II) measure (Olson, Portner, & Bell, 1982) have

demonstrated good reliability in various samples (Fulligni et al., 1999; Lorenzo-Blanco et al., 2012; Lorenzo-Blanco et al., 2013; Santisteban et al., 2012). Although studies have been able to measure family cohesion consistently using a valid and reliable measure, research has not investigated potential differences by race/ethnicity and have largely been cross sectional (Reeb et al., 2015; Roosa et al., 2009). Despite the aforementioned limitations, family cohesion is still a critical process to investigate alongside family traditionalism, especially in thinking about the role that familismo has in Latino families. The key research limitation is the lack of studies that have analyzed whether family cohesion and family traditionalism are key indicators of a second order construct (familismo) or the direct effects of said variables on level of parent involvement.

Parental Involvement

Parents who are involved in the lives of their children and family environments that foster and promote family cohesion can have a positive impact on youth pro-social behavior including the ability to perform well in school, follow rules, and forming positive peer group relationships (Livas-Stein et al., 2012; Pantin et al., 2003a). Parental involvement, the extent to which parents spend time with their children engaging in activities and the frequency of parent-child communication, is key in providing social support to youth, building trust, developing positive parent-child relationships, as well as in preventing substance use (De La Rosa & White, 2001).

Parent involvement may provide youth, particularly Latino adolescents, with a critical support that helps mitigate unhealthy family functioning and the negative influences outside of the home environment. Parent support and involvement has been

found to be inversely associated with substance use (Lindenberg et al, 1994; Parsai, Voisine, Marsiliga, Kulis, & Nieri, 2009), however multivariate modeling is needed to identify the specific pathways between family traditionalism, family cohesion, and parent involvement on youth substance use.

Among Latino adolescents, level of parent involvement is an important factor in protecting against substance use and/or risk for criminality. However, families that do not have good parent-child relationships and/or have high conflict place youth at higher risk for substance use and delinquency (Cox et al., 2011). Werner's (1986) seminal longitudinal study on parent-child relationships (N = 49) and youth engagement in risk behavior, found that the absence of parent-child conflict along with high quality parent-child relationships were vital in building resiliency among youth. Pilgrim et al. (2006) found that low parental involvement was associated with greater substance use and did not have as great of an impact on older youth compared to younger youth in a study testing a mediation model of substance use. Although a strength of this study was the use of multi-group structural equation modeling for the analyses, this study was limited given that the data was from Monitoring the Future cohorts in the mid 1990's (1994-1996). Nevertheless, Werner (1986) and Pilgrim et al.'s (2006) found that the role that parent involvement was protective for youth, but that influence dissipated over time as youth become older.

Using data from the National Study on Adolescent Health, otherwise referred to as Add Health, Prado et al. (2009) assessed the impact of family functioning on substance use in sample of Latino adolescents (N = 742). Family functioning was operationalized as

parent involvement and family connectedness. Parent involvement was measured using a 20-item previously validated measure. The large sample size, use of SEM modeling to test direct and indirect effects, the parent involvement measure, and large the percentage of Mexican youth in the sample were several strengths of this study. The results suggest that parent involvement may be protective for youth, which may result from parents facilitating positive relationship development and modeling good communication and problem solving strategies (Prado et al., 2009).

Another study by Santisteban and colleagues (2012) used SEM to investigate the mediating effects of parenting practices, using Gorman-Smith and colleagues' (1996) scale (parent involvement, positive parenting, avoidance of discipline, discipline effectiveness) and familism between acculturation and externalizing behavior in a sample of middle school Latino adolescents. Familism was not found to be a significant mediator, however follow up analysis found significant indirect effects from familism to externalizing behaviors through parenting practices.

Although much research has investigated the influence that social support has on youth risk behavior (Pantin et al., 2003a; Marsiglia et al., 2009), no studies were found that examined the effects of parent involvement, an important aspect of family functioning, as a mediating mechanism, specifically between family cohesion and family traditionalism on Latino substance use. While discussion thus far has largely surrounded the role of culture and family in Latino populations, models that have tested the effects of family traditionalism, family cohesion, and parent involvement together in a mediational framework are limited.

The current study may therefore fill a gap in the literature by not only exploring the dimensions of familismo specific to family cohesion and family traditionalism, but the direct and indirect effects of said processes on parent involvement and youth substance use. This research may yield further insight into possible points of intervention when working with Latino youth and families and may provide further knowledge into how family traditionalism and family cohesion actually impact parent involvement and youth risk behavior. The relevance of family and culture in youth developmental and behavioral processes further highlights the need for this research (Coatsworth et al., 2002a; Szapocznik & Coatsworth, 1999).

Acculturation

Exploring the direct and indirect effects of key cultural and familial processes on youth development and substance use is critical, however this research would be incomplete without considering the impact of acculturation. Acculturation is a complex process by which a particular ethnic minority group lives and adjusts to a foreign majority culture by taking on the behaviors and attitudes of that particular majority group (Marsiglia, Nagoshi, Parsai, Castro, 2012). The association between acculturation and Latino health risk behavior have yielded the most consistent culturally relevant findings related to substance use and dependence in the study of Latino adolescents (Caetano & Clark, 2003; De La Rosa, Holleran, Rugh, & MacMaster, 2005; Epstein, Botvin, & Diaz, 2001; Santisteban et al., 2012; Szapocznik et al., 2007; Warner et al., 2006).

For recent immigrants, acculturation is a socialization process into mainstream ideas about ethnicity "and a reorientation that balances two conflicting needs—to

preserve the culture of origin and yet become part of the new culture" (Marsiglia, Kulis, Wagstaff, Elek, & Dran, 2005, p.89). The process of adjusting to a new culture for immigrants is stressful and may punctuate health and social risks for Latinos (Berry, 2005; Turner et al., 2006). Raising children in a foreign culture is particularly difficult (Prado et al., 2008) due to the difference in traditional Latino and mainstream American value systems (Marsiglia & Kulis, 2009; Van Wormer & Davis, 2013).

For example, Adjusting to American culture can be stressful since Latino cultural values and norms emphasize family and respecting elders while mainstream American cultural values and norms emphasize the individual over the family (Marsiglia, Nagoshi, Parsai, Gonzalez-Castro, 2012). Having limited English proficiency and raising children in a foreign culture may also contribute further to the cultural divide (Prado et al., 2008). This conflict between cultural values may contribute further to the stress of adapting to a new environment, may lead to a deterioration of Latino family values/attitudes (Gil, Wagner, & Vega, 2000; Vega, Zimmerman, Warheit, & Gil, 2003), and punctuate health and social risk for Latino youth (Berry, 2005; Gil et al., 2000; Koss-Chioino & Vargas, 1999; Marsiglia et al., 2012; Prado et al., 2008; Turner, Lloyd, & Taylor, 2006; Van Wormer & Davis, 2013; Vega et al., 2003).

In a study on acculturation and family cohesion, Gil and Vega (1996) found family cohesion to decrease as Latino youth (N = 885) became more acculturated. Similarly, Baer and Schmitz (2007) investigated the impact of gender, family structure, socioeconomic status, and acculturation (language use measure) on family cohesion and cultural orientation in a sample of Mexican-American and non-Latino White adolescents.

Family cohesion was found to increase over time among Mexican-American youth who were more oriented to Mexican culture (*N* = 738) versus Mexican-Americans oriented to majority American culture (*N* = 867) and non-Latino Whites (*N* = 2551). Miranda and colleagues' (2000) study examining the influence of different levels of acculturation (low, bicultural, and high) on family cohesion found that lower acculturated Latino families (*N* = 198) had higher family cohesion compared to families that were more acculturated. Another study by Miranda, Estrada, & Jimenez (2000) found a positive association between acculturation and loss of family cohesion.

A study by Santisteban and colleagues (2012) investigated the effects of acculturation on youth externalizing problems. Orientation to Latino culture, otherwise known as Hispanicism, was associated with lower externalizing problems while orientation to American culture was associated with higher externalizing problems. A strength of this study was the large percentage of Mexican Americans in the sample (n = 165; 36%) and the measurement of acculturation, which used a bidimensional assessment by looking at endorsement of both culture of origin and American culture.

Similarly, a study by Martinez, Huang, Estrada, Sutton, and Prado (under review) used a similar measure of acculturation and conducted multigroup analysis to test the effects of Hispanicism and Americanism on family functioning, school bonding, negative peer drug use attitudes, and substance use outcomes in a cross sectional sample of Hispanic youth (*N* = 1,141). Hispanicism was associated with greater family functioning and school bonding. American cultural orientation, otherwise known as Americanism, moderated the effect of Hispanicism on past 90-day substance use, resulting in youth

greater substance use. Findings from this study suggest that Hispanicism was protective against substance use, however those effects decreased for youth who were more acculturated to American culture (Martinez et al., under review). Although Martinez et al. (under review) used a similar acculturation measure to the one that Santisteban and colleagues (2012) used, most youth in the sample were of Cuban descent, which limits the generalizability of this study.

Parental support and family cohesion have been found to protect youth against substance use, however these processes may be weakened during the process of acculturation (Marsiglia et al., 2009; Martinez, 2006; Prado et al., 2008; Szapocznik & Kurtines, 1993). Despite the literature surrounding the negative effects of acculturation, some studies have found attitudes and familial processes to get stronger as families became more acculturated. For example, Lorenzo-Blanco et al.'s (2013) study on Mexican American youth in California found a positive association between acculturation and familismo. As well, although Updegraff and colleagues (2012) found decreases in familism values and Latino cultural involvement as acculturation increased in a sample of Mexican-American youth, Gil and Vega (1996) found that attitudes towards familism remained an important value among Latino youth (N = 885) despite their level of acculturation.

In Sabrogal and colleagues' (1987) seminal study on familism, they found that despite familism attitudes decreasing as participants became more acculturated, they still reported more favorable attitudes towards the idea of familism compared to their European counterparts. Considering that the family is the primary resource immigrant

families may have, increases in familismo as the acculturation process occurs may demonstrate the reliance that family members have on each other as they adjust to American ways of living. When immigrant families are supportive and increasingly reliant on one another, the adverse effects of acculturation may be mitigated.

Research has provided key insights into the effects of acculturation on family functioning and health risk behavior. The measurement of acculturation has progressed over the past two decades and researchers are now able to capture multiple dimensions of the acculturation process such as language, attitudes, and behaviors. Family traditionalism, a focus in the current study, is hypothesized to be protective against substance use, however cultural processes such as traditional family norms decrease as youth become more acculturated to American culture (Vega and Gil, 1999).

In a 2008 study, Castro and colleagues found a significant and inverse association between traditional family values and acculturation. In that same study, as well as in a subsequent study by Castro et al. (2009), acculturation was significantly associated with higher alcohol and cigarette use. Given the findings specific to acculturation from previous research, it is hypothesized that acculturation will attenuate the effects of family traditionalism on substance use.

Literature Summary

More than 90% of Latino children are U.S. born citizens and more than 70% are of Mexican origin. Although some social outcomes have been improving for Latino's overall, Latino youth remain an at risk group. Latino youth have some of the highest substance use and earliest drug initiation rates compared to their peers and also have the

highest dropout rate in the U.S. Furthermore, the risk for substance use and negative family and school outcomes may be heightened when families are socioeconomically disadvantaged, disconnected, or are experiencing language and cultural challenges. Despite the risks that Latino youth and families face, they also possess cultural and familial strengths that may help protect them from negative outcomes such as substance use. This is an important area of inquiry given the significance and uniqueness of cultural variables in Latino behavioral health (Castro & Hernandez-Alarcon, 2002), but more research is needed however that investigates the specific pathways of cultural, familial, and acculturation processes on adolescent substance use.

For example, the influence of familismo (family cohesion and family traditionalism) on parent involvement may protect youth, however, studies that have examined the effects of family cohesion and family traditionalism on youth problem behavior together are limited. As well, although certain aspects of culture (e.g., religiosity, familismo, respeto) have been found to be protective for Latino youth and families (Lorenzo-Blanco et al., 2012; Marsiglia, Ayers, & Hoffman, 2012; Martinez, Marsiglia, Ayers, & Nuño-Gutierrez, *in press*; Santisteban et al., 2012), limited research has statistically examined whether family traditionalism or family cohesion make up a higher order construct (familismo).

Further, studies that have examined the effects of family traditionalism, family cohesion, and/or familismo on substance use and other externalizing disorders have been cross sectional (Behnke et al., 2008; Castro et al., 2007; Castro et al., 2009; Gonzales et al., 2008; Fulligni et al., 1999; Marsiglia et al., 2009; Sabrogal et al., 1987; Santisteban et

al., 2012) or have not incorporated theoretical models that account for developmental and cultural context (Deng et al., 2006; McKeown et al., 1997; Roosa et al., 1996; Unger et al., 2009). Further, although previous research suggests that acculturation significantly influences family traditionalism, more longitudinal studies are needed that examine the effect of acculturation on family traditionalism and family cohesion with this population. Analytic models that explore the mediating and moderating mechanisms of cultural, familial, and acculturation processes can help elucidate potential risk and protective pathways for substance use.

Various limitations in the studies reviewed in this chapter underline the focus of the current study. Several studies that investigated the influence of family functioning on substance use (Prado et al., 2009; Santisteban et al., 2003) have limited generalizability due to their samples consisting of Cuban and Puerto Rican Latino sub-groups (Martinez et al., under review; Pantin et al., 2003a; Prado et al., 2010). Given the heterogeneity within and between Latino sub-groups, studies are needed that elucidate the influence of culture and family on youth risk behavior specific to Mexican origin populations. Based on the previous literature it is hypothesized that both family traditionalism and family cohesion will load onto a higher order factor, familismo, and will have a positive influence on parent involvement. As well, family traditionalism and family cohesion will have inverse and significant indirect effects on substance use through parent involvement.

Ecodevelopmental Theory: Ecological Predictors of Substance Use

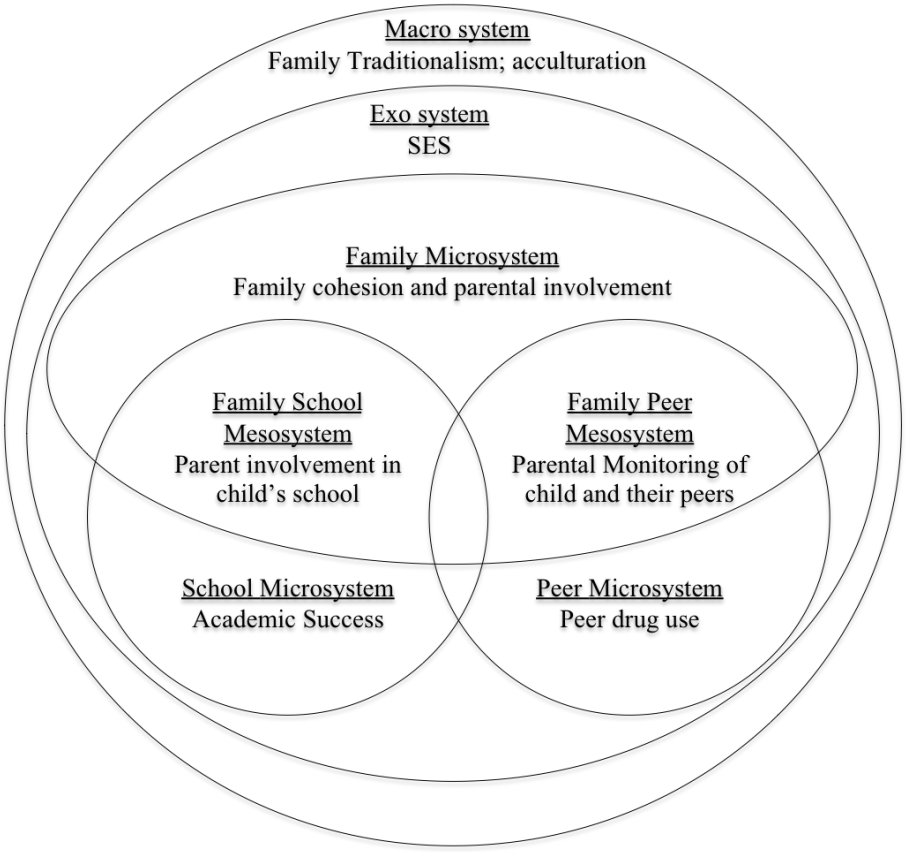
Ecodevelopmental theory incorporates the main tenets of Urie Bronfenbrenner's ecological systems theory (1979 & 1986), Salvador Minuchin's structural family therapy (1974; Minuchin & Fishman, 1981), and Hawkins and colleagues' (1992) risk and protective factor paradigm. The risk and protective (resiliency) factor paradigm specifically is widely utilized in conceptualizing Latino adolescent substance use (Castro et al., 2006; Prado et al., 2008). Protective factors, which are also referred to as resiliency, can help youth have an increased resistance to risk factors and subsequent risk behaviors (Rutter, 1987). Research has postulated that increased resiliency can positively impact social and health outcomes for youth even when adversity and stress are present as they develop (Masten, 2001). Conversely, risk factors, which are considered precursors to youth substance use, may be dependent on specific demographic characteristics (age, development, and adolescents peer group) in addition to the familial, cultural, and social contexts of the adolescent (Warner et al., 2006).

Given that risk and protective processes often operate together, they should be examined within an integrated and multidimensional developmental framework (Szapocznik & Coatsworth, 1999; Szapocznik et al., 2007). Ecodevelopment is one such multidimensional approach that focuses on four main systems including micro, meso, exo, and macro (Bronfenbrenner, 1968, 1979, 1986) and their influence on family functioning, adolescent development, and youth risk behavior (Coatsworth et al., 2002a; Szapocznik & Coatsworth, 1999).

The reciprocal interactions between micro, meso, and macro factors, commonly referred to as bidirectional influences, can aggravate or mitigate risky behavior. As such, the interplay between the family and cultural contexts can assist in predicting youth risk behavior, especially since ecodevelopment examines the influence that cultural factors have on an individual's social ecology (Szapocznik et al., 2007; Szapocznik & Coatsworth, 1999; Szapozcnik & Williams, 2000). Further, investigating "the developmental trajectory of these [cultural and familial] processes over time" is essential considering the change that youths' social ecosystems go through as they develop during adolescence into adulthood (Szapozcnik & Williams, 2000; Szapocznik et al., 2007, p. 81).

Figure 1.

Ecodevelopmental Conceptual Model



Micro, Meso, Exo, and Macro, Systems

Micro. The micro system is the most proximal system since it relates to the individual in a direct manner most notably through parents, peers, and school (Szapocznik and Coatsworth, 1999). Given that proximal processes are closest to the individual, it is thought that they have the strongest role in shaping individual development and youth behavior (Coatsworth et al., 2002a; (Koss-Chioino & Vargas, 1999). Familial processes are an important part of the micro system and are thought to be

the most “influential [among] the social ecological domains” (Szapocznik & Coatsworth, 1999, p.353). These processes include parental involvement, family cohesion, parental monitoring, and disciplinary style (Prado et al., 2010).

Although associating with pro social peers and positive school bonding are other important micro level protective factors, the family still has the strongest influence on youth behavior (Feldman, 2008). Family cohesion and parental involvement specifically provide adolescents with social support that is critical to healthy adolescent development and the prevention of deleterious risk behavior. It is thought that families that are cohesive will result in increased parent involvement. As a result, the family can act as a critical social support system for youth that may protect them from engaging in substance use or associating with peers who do not engage in pro social behavior (Gil et al., 1998; Hawkins et al., 1992; Szapocznik & Coatsworth, 1999).

Meso. The meso-system consists of the relationships that have an influence on youth, however in an indirect manner (Coatsworth et al., 2002a; Prado et al., 2010). These relationships often include family-peer and family-school interactions. For example, parents who are involved in their kids schooling tend to communicate more with their child’s school teachers and as such may be able to provide further academic support and promote academic success. This social support may help protect youth and may contribute to healthy development. Social support factors within the family-peer mesosystem can include parental monitoring of peers, parent supervision of adolescent activities, and parent involvement in their child’s academic activity (Coatsworth et al., 2002a; Naimi et al., 2003; Prado et al., 2010).

Exo. Related but distinct from the meso system is the exo system, which is completely independent of the child. The influence of the exo system on development and behavior operates indirectly through its effect on meso and individual micro systems (Coastsworth et al., 2002a). Influential exo factors can serve as a protective function for youth and include social and emotional support that parents may derive from their work settings and parent social networks (Pantin et al., 2003a). This particular social and emotional support may increase the likelihood that parents are positive and nurturing (Szapocznik & Coatsworth, 1999). If parents are stressed, however, as a result of economic and other stress related factors associated with adjusting to mainstream American culture for example, youth may not receive as much social support from their parents and may be at risk for substance use depending on the type and chronicity of the stress (Coatsworth et al., 2002a).

Macro. The macro system consists of the cultural (e.g. language, ideology, laws, cultural values and beliefs) and social structural influences (e.g. economy) that influence the family (Szapocznik & Coatsworth, 1999). Culture is infused into the fabric of Latino adolescents and is weaved into the social contexts of Latino families (Castro et al., 2007). Culture informs normative behavioral expectations for youth (Escobar & Vega, 2006; Koss-Chioino & Vargas, 1999; Marsiglia & Kulis, 2009) and includes family *traditionalism* (traditional family norms), *familismo* (family pride and support), *respeto* (respect and deference to elders), *personalismo*, *simpatia* (relating to others and a harmonious way), and *confianza* (trustworthiness and interpersonal trust). The aforementioned concepts are examples of cultural constructs that impact interpersonal

relationships between family/parents and youth (Castro & Hernandez-Alarcon, 2002; Castro et al, 2006; Halgunseth et al., 2006).

In addition to the previously mentioned cultural processes, acculturation is another primary macro factor that has been found to negatively impact family functioning and youth behavior (Prado et al., 2009). For recent immigrants, value and belief differences in their traditional culture versus mainstream American culture may make it difficult and stressful to adjust to living in the U.S. This difficulty may create tension due to the disconnect between traditional cultural values and mainstream American cultural values (Gil et al., 2000; Vega et al., 2003). For example, mainstream American culture tends to be more individual focused and emphasizes competition, whereas Latino culture promotes putting others, particularly the family, ahead of ones own wants and desires (Pantin et al., 2003b).

The stress associated with acculturation may lead to decreases in the salience of traditional family norms and family cohesion and may make Latino adolescents more vulnerable to unhealthy behavior (Baer & Schmitz, 2007; Gil et al., 2000; Miranda et al., 2000; Gil & Vega, 1996; Vega et al., 2003). Ecodevelopmental theory posits that youth change over time as they grow and develop, however causal models that examine the complex relationships between culture (macro), acculturation (macro), and key familial processes (micro and meso) throughout adolescent development are needed and may yield further insight into how these various factors operate together.

Strengths and Limitations of Ecodevelopmental Framework

The use of systems theories in social work increased during the 1970's and continues to be used especially in work with families, youth and children (Jenson & Fraser, 2011; Payne, 2005). Ecological models such as ecodevelopment serve as guiding frameworks for examining and understanding the impact of family functioning and youths' social contexts on adolescent problem behavior (Castro et al., 2006; Szapocznik & Coatsworth, 1999). Thus, incorporating ecodevelopmental theory into this proposed work improves on prior descriptive studies due to the specific explanatory hypotheses that concern the influence of culture, development, and family functioning on youth substance use. Ecodevelopment is especially appropriate when working with ethnic minority youth since other ecological models do not consistently account for culture and development. As a result, other ecological models are thus unable to provide a holistic and multidimensional understanding of youth in their social environment (Payne, 2005).

Utilizing an ecodevelopmental framework may help fill this gap in social work research since it highlights the importance of focusing on the interrelationship between ethnic minority families' cultural and developmental processes within the scope of ethnic minority youth risk behavior. Reducing risk factors and enhancing protective factors may help delay or prevent the onset of substance use and may further help define how best to intervene on behalf of Latino youth and families.

A limitation, however, of ecodevelopmental theory is the predominant focus on parenting practices rather than the quality of the parent child relationship itself. This study attempts to move beyond an examination of only parenting practices and seeks to

investigate familial processes that may promote quality parent child relationships. As well, the risk and protective factor paradigm under the guise of ecodevelopmental models tends to focus on risks in lieu of strengths. Tapping into strengths is thought to be conducive to empowering individuals and families and can promote solution-focused strategies that improve family functioning and delay or prevent youth substance use (Hepworth et al., 2013). Furthermore, employing deficit-based labels (focusing on risk) is limiting and problematic since key strengths that may serve as critical protective factors against substance use can be missed in the research process. For example, parents may not respond well to practitioners or prevention programs that give the message they "need to parent their children better". Instead of proscribing practices that help develop parents oversee their child better, it may be useful to reframe the focus of parenting and hone in on the protective processes that enhance strengths, establish rapport, and build trust within families.

Current Study

This dissertation study will examine the direct and indirect effects of family traditionalism, family cohesion, and parent involvement on youths' alcohol, cigarette, and marijuana substance use outcomes. Family traditionalism and family cohesion, micro and macro factors respectively, can be considered integral components of familismo in Latino families. From an ecodevelopmental perspective, families that are both cohesive and endorse traditional family cultural norms may be protective for youth as a result of the strong connection to the family. Having a strong family connection may lead to an increase in parent involvement, especially considering the strong sense of duty and

interdependence that is associated with the family in Latino populations. As such, these familial processes may have a significant influence on each other as well as on adolescent substance use outcomes.

In addition to the aforementioned relationships, the effects of acculturation on family traditionalism and family cohesion will be tested. Although socio-cultural and familial processes may be protective for Latino adolescents, they can be impacted negatively by acculturation. The clash of values from the culture of origin and mainstream American cultural values in the acculturation process can cause stress in families, which may become more palpable as youth get older since they tend to acculturate more quickly than their parents (Martinez, 2006). Thus, the moderating effect of acculturation on both family traditionalism and family cohesion for substance use outcomes will be tested. Please see Figure 2 on page 66.

Thus far, the literature specific to family cohesion, family traditionalism, parent involvement, acculturation, and youth substance use has been discussed. The focus of this discussion has centered on the influence of culture and family on youth substance use. The next chapter provides details regarding the data that was used for this dissertation study as well as the procedure that was utilized to test the primary aims of this study. Chapters 4 and 5 present the results and interpretation of the findings.

CHAPTER 3

METHODS

This study utilized a secondary data set with a large number of Mexican-American parents and youth to examine the direct and indirect effects of family traditionalism, family cohesion, and parent involvement on alcohol, cigarette, and marijuana use outcomes and whether the effect of family traditionalism and family cohesion on substance use decreased for youth that had higher acculturation (See Figure 1). It is hypothesized that greater family traditionalism, family cohesion, and parent involvement will have protective effects for youth in the sample on substance use outcomes. The specific focus of this chapter is on the data source, measures used, and the data analytic plan.

Data/Procedure

The current study used three waves of data from a study titled *Familias Preparando a la Nueva Generación (FPNG)* (Families Preparing the Next Generation) (Parsai, Castro, Marsiglia, Harthun, & Valdez, 2011*).* This NIH funded study assessed the impact of a parent education curriculum, delivered in conjunction with *keeping it REAL* (*kiR*), on youth substance use outcomes (please see Hecht et al, 2003, for a detailed description of the *kiR* prevention study). Marsiglia et al. (2013) added a parental component to *kiR,* which was modeled after an efficacious Latino parent invervention called *Familias Unidas* (see Pantin et al., 2003a). Familias Unidas is a family-centered intervention that focuses on lowering the risk for Latino adolescent risk behavior (see Pantin et al., 2003a). *Familias Unidas* concentrated on increasing parent investment by

providing a forum where parents and adolescents and parents could strengthen their relationship and bonding (Coatsworth et al., 2002a; Pantin et al., 2003a). Despite its utility, the *Familias Unidas* study had high percentages of Cubans and Puerto Ricans and was based within a clinical setting, which limits generalizability to both other Latino families (i.e., Mexican) and type of intervention (e.g., clinical versus universal).

Due to the limitations of previous prevention/intervention studies, *FPNG* was culturally adapted using a community based participatory research approachstudy tested whether the intervention increased parent investment in their kids and whether it increased the preventive effects of *kiR* on Latino youth substance use outcomes by targeting family conditions that have been associated with negative drug use outcomes among individual, familial, and school contexts.

A three group, pre-test post-test follow up randomized control trial was utilized to test FPNG (Marsiglia et al. 2013). A block randomization technique was used in the FPNG study to increase sample variability (Shadish, Cook, & Campbell, 2002) given the possible variation in both ethnic makeup and school size (Marsiglia et al., 2013). Nine schools were drawn into three blocks that had three conditions: Parent-Youth, Youth Only, and Control conditions. Each block consisted of three schools: Block 1 had the schools with the highest percentage of Latinos while Block 3 included schools with the lowest percentage of Latino students. In order for schools to participate, schools that had a student body consisting of seventy percent or more Latinos was required (Marsiglia et al., 2013). Other inclusion criteria required that parents have a child who was in the 7^{th} grade and be attending one of the participating schools (Marsiglia et al., 2013).

Schools within each block were randomly assigned a number that represented one of the three conditions. Condition 1 was the parent-youth condition (PY) in which parents received FPNG while youth received *kiR*. Condition 2 was the youth-only condition (YO) in which youth received *kiR* but parents did not receive FPNG. After all of the eligible schools consented and were randomized into conditions one of the three conditions, researchers visited each of the schools to meet with principals and teachers individually to explain the purpose of the study. Even though the superintendents agreed to participate, principals and teachers still had the authority to allow or prohibit implementation of the study at their schools. A packet with written information about the research center and university conducting the study, information regarding their randomized condition, and details on the Families Preparing the Next Generation project was provided to principals.

Consenting Procedures

Data Collection and Human Subjects. This study met the ethical and procedural requirements of the sponsoring university's Institutional Review Board. Students were required to provide written assent and written consent from their parents in order to participate. Trained researchers explained informed consent to both youth and parents and parental consent forms asked if (1) the parent wished to participate in the study and if (2) they allowed their child to participate. Participants were informed of the study process with respect to the specific condition they were assigned to before they completed informed consent. Participants that chose to continue in the study were given three participation options depending on their condition: (1) consenting to both parent and

youth participation; (2) consenting to youth-only participation; or (3) consenting to neither parent nor youth participation. After students completed the pre-test survey, their parents were invited to complete their portion of the curriculum. If an adolescent was not participating in the survey, their parents were not asked to complete the survey or take part in the curriculum. Inclusion criteria mandated that parents have a child who was in the 7th grade and attended one of the participating schools (Marsiglia et al., 2013).

Teachers played an important role in the parental consent process by encouraging students to complete and collect the consent forms. Parent consent forms were available in both English and Spanish and collected demographic information such as parent and youth name, phone number, address, and email address. The purpose of collecting this information was to track the surveys, which were kept confidential at all times and were stored securely at the host university. After teachers collected the consent forms and turned them back into the research team, a unique identifying number was given to individuals and a common identifying number was assigned to identify families and parent-youth dyads for the purpose of follow up assessments. Identifying participant information such as class, teacher, school location, and phone number were collected and entered into a safe and locked database located at the sponsoring university.

Survey Administration. Two cohorts of parents and 7th grade students from the 2009-2010 and 2010-2011 academic school years comprise the current sample (See Table 1). Administration of surveys occurred at three time points over the course of two years. Early in the fall semester of the participant's 7th grade year, a baseline (pre-test) assessment was administered to both students and parents (See Table 1). Once the eight-

week prevention/intervention was complete, a second observation (post-test) was administered in the spring of that same academic year. No observations were conducted in the fall of the participant's 8th grade year, however students did receive booster sessions. A final observation (follow-up) was administered during the spring semester of the participant's 8th grade year. Please refer to Table 1 below for additional detail.

Table 1.
Survey Administration Schedule

Survey Administration Schedule			
Cohort	Pre-test survey (Wave 1)	Post-test survey (Wave 2)	Follow-up (Wave 3)
Cohort 1	Fall 2009	Spring 2010	Spring 2011
Cohort 2	Fall 2010	Spring 2011	Spring 2012

Measures

Parent measures were used to assess family traditionalism (time one), family cohesion (time two), and parental involvement (time two). Youth measures from time three assessed the main substance use outcomes as well as acculturation.

Family Traditionalism (parent measure). Family traditionalism was treated as a latent variable to assess attitudes and beliefs toward traditional and conservative Latino family norms and behavior (Castro & Gutierres, 1997; Castro et al., 2007; Castro et al., 2009). Family traditionalism, a previously validated 8-item, scale, was based on Ramirez's (1991) Traditionalism-Modernism scale and included items specific to family bonding, loyalty, sentiment regarding traditional cultural celebrations and customs, and whether or not preservation of traditional celebrations and customs was important. Sample items include: "you should know your family history so you can pass it along to

your children" and "we should preserve our customs and traditions as they contain the wisdom of generations of our forefathers." Response options were on a five point Likert scale: (1) 'Disagree a lot' to (5) 'Agree a lot'. Overall, this family traditionalism scale has demonstrated acceptable internal consistency (Cronbachs α) alphas ranging from .62 (Castro & Hernandez-Alarcon, 2002) to .69 (Castro & Gutierres, 1997; Castro et al., 2007) in previous studies with Latinos. In the current study, this measure demonstrated good reliability with a Cronbach's alpha coefficient of .82. Overall, this indicated that this measure was appropriate with the current sample.

Family Cohesion (parent measure). Family cohesion was treated as a latent factor and assessed characteristics of family relationships such as closeness, structure, and beliefs about the family. Family cohesion was based on a previously validated 7-item scale (Tolan, Gorman-Smith, Huesmann, & Zeli, 1997). Sample items include: "family members feel very close to each other", "we can easily think of things to do as a family", and "family members like to spend free time with each other." Response options ranged from (1) 'Not at all true' to (4) 'Almost always true'. The family cohesion scale has demonstrated good internal consistency (α = .72) in prior studies (Fulligni et al., 1999; Olson et al., 1979; Olson et al., 1992; Tolan et al., 1997). In the current study, this measure demonstrated good reliability. The Cronbach alpha coefficient for family cohesion was .82.

Parental Involvement (parent measure). Parent Involvement was a latent factor that was constructed using seven questions. The parental involvement questions have been previously validated and assess parent involvement in their child's daily activities

(Gorman-Smith, Tolan, Zelli, & Huesmann, 1996). Sample items include: “do you and your child do things together at home?” and “how often do you have a friendly chat with your child?” This scale has demonstrated good internal consistency alphas around .71 (Gorman-Smith et al., 1996) and .81 (Gorman-Smith, Tolan, & Henry, 2000) in previous studies with Latinos. This measure had a Cronbach’s alpha of .72, and demonstrated acceptable reliability in the current study.

Acculturation (youth measure). Acculturation was an observed variable that assessed linguistic preference. Language preference is considered to be a proxy of acculturation and has been found to be a robust predictor of Latino substance use in previous work despite limitations (Marsiglia et al., 2005; Marsiglia & Waller, 2002; Valencia & Johnson, 2008). Language preference was measured at time 3 using 6 questions from the General Acculturation Index (Castro & Gutierres, 1997) and has demonstrated good reliability (α = .69) in previous studies (Castro et al., 2007). The three questions used asked about language use in speaking to family and friends and if participants preferred watching television or listening to radio/music in Spanish. For example, questions asked: “at this time, you speak:…” and “at this time, you listen to the radio/music in:…”, with options ranging from ‘English’, ‘Spanish’, or both languages.’ In the current study, three of the language questions were not compatible in a quantitative format. Therefore three of the six questions were used to measure acculturation. All three items were summed and scaled to create an observed variable. Together these items demonstrated acceptable reliability and had a Cronbach’s alpha of .76 in the current sample.

Substance Use (youth measure). Three items each assessed alcohol, cigarette, and marijuana use outcomes: past 30-day amount, past 30-day frequency, and lifetime alcohol use, past 30-day amount, past 30-day frequency and lifetime cigarette use, and past 30-day amount, past 30-day frequency and lifetime marijuana use (Flannery, Williams, and Vazsonyi, 1994). These substance use items have been found to be developmentally appropriate in previous studies with Latino adolescents (Elek, Miller-Day, & Hecht, 2006; Hecht et al., 2003). The question about past 30-day alcohol use asked 'How many drinks of alcohol have you had in the last 30 days?', with responses ranging from (1) 'None' to (7) 'More than 30'. As well, the question about lifetime alcohol use asked 'How many times have you drunk more than a sip of alcohol in your lifetime?', with responses ranging from (1) 'None' to (7) '40 or more'.

Similar questions assessed cigarette and marijuana use. For example, the question about past 30-day cigarette use asked 'How many cigarettes have you smoked over the last 30 days?', with responses ranging from (1) 'None' to (7) 'More than 20'. As well, the question about lifetime cigarette use asked 'In your lifetime how many times have you smoked cigarettes?', with responses ranging from (1) 'None' to (7) '40 or more'. Finally, the question about past-30 day marijuana use asked 'How many times have you smoked marijuana (pot, weed) in the last 30 days?, with responses ranging from (1) 'None' to (7) '40 or more'. The question about lifetime marijuana use asked 'How many times have you smoked marijuana (pot, weed) in your lifetime?, with responses ranging from (1) '0' to (7) '40 or more'.

Control Variables/Co-variates. There are several theory and research driven control variables that must be accounted for in order to help explain the variance and to decrease the chances of making a type 1 error. Accounting for potential confounders is critical, particularly when assessing causal inference in SEM models (Gollob & Reichardt, 1991), since they can lead to misspecification of the hypothesized models and/or result in inflated or spurious estimates (Kline, 2011). For this reason, several covariates were utilized in the current study and included time spent in the United States (i.e., nativity status), birthplace of mother and father, age, and treatment condition for both youth and parents. Given the use of nativity status and birthplace of mother and father as covariates, and due to the focus of the study being on pathways of specific cultural and familial processes, acculturation was not controlled for in aims 2 and 3. Controlling for acculturation may have complicated these structural models, which would have detracted from the primary aims of this study. Regarding aim 4, acculturation was not controlled for since it was a key variable in that particular analysis. In order to address the acculturation as a potential confounder, variables relevant to the acculturation process such as time spent in the U.S. (nativity status) and birthplace of mother and father (generation status) were used as primary control variables.

The question about time spent in the U.S. asked youth 'How long have you lived in the U.S.?', with responses ranging from (1) 'less than 1 year' to (5) 'all my life'. The questions about birthplace of both mother and father asked youth 'Where was your mother/father born?', with responses including (1) 'United States', (2) 'Mexico', (3) 'Other country'. (4) 'don't know', and (5) 'Mexico & other country'. Age of youth was

assessed using a continuous measure. Participants had the option of responding (1) '7 years of age' to (9) '15 or older'.

Research Questions and Specific Aims

The specific aims of this study are to investigate the direct and indirect effects of family traditionalism and family cohesion on parent involvement and Latino adolescent alcohol, cigarette, and marijuana use. Investigating mediated effects is important in prevention research and can be used to help understand the mechanisms that impact adolescent health and family functioning (Fairchild & MacKinnon, 2009). As well, this study will explore the moderating effects of youth acculturation by family traditionalism and family cohesion on youth substance use. The rationale for focusing on alcohol, cigarettes, and marijuana use outcomes is reflective of national trends demonstrating that Latino adolescents display some of the highest early adolescent drug use compared to their peers (CDC, 2012; Merline, O'Malley, Schulenberg, Bachman, & Johnston, 2004; Office of the Surgeon General, 2007; Zucker, 2006).

The analytic plan for this dissertation study was based on parent and youth data from all three waves of FPNG data collection. Two cohorts of parents and their 7th grade child from the 2009-2010 and 2010-2011 academic school years comprise the current sample (see Table 1.). Parent measures from time two and time three and youth measures from time three were utilized. The sample size for parents at time 1 and time 2 was 462 and 411 respectively while 635 youth comprised the sample size at time three. Given that the sample size at each wave exceeds 200 participants, there is enough power to test the

hypothesized statistical models (Kline, 2011; MacKinnon, 2008). As mentioned previously, this study is utilizing the FPNG data set as a secondary data analysis.

The aims and hypotheses for this dissertation study build off of previous research and are conceptually grounded within ecodevelopmental theory. Ecodevelopmental theory posits that the family is the most proximal and important protective factor for ethnic minority youth. Further, ecodevelopment recognizes the influence that culture and adolescent development have on youth risk behavior. Thus, it is hypothesized in this study that attitudes and values regarding traditional family norms and values as well as cohesiveness of the family will predict greater parent involvement and less substance use. In this vein, parent involvement in their children's lives will also buffer youth against substance use.

The specific aims of this dissertation study are:

AIM 1: To explore whether family traditionalism and family cohesion represent a single construct.

H_1 = Family traditionalism and family cohesion will significantly load onto a single construct, familismo

AIM 2: To determine the influence of family traditionalism and family cohesion on parental involvement (parent measures) and youth substance use.

H_2 = Greater family traditionalism will positively predict parental involvement (direct relationship)

H_3 = Greater family cohesion will positively predict parental involvement (direct relationship)

H_4 = Greater family traditionalism and family cohesion will predict less youth substance use (direct relationship)

AIM 3: To determine the effects of parent involvement on youth substance use; specifically if parent involvement mediates the effects between family traditionalism and family cohesion on youth substance use.

H_5 = Greater parental involvement will predict lower youth substance use

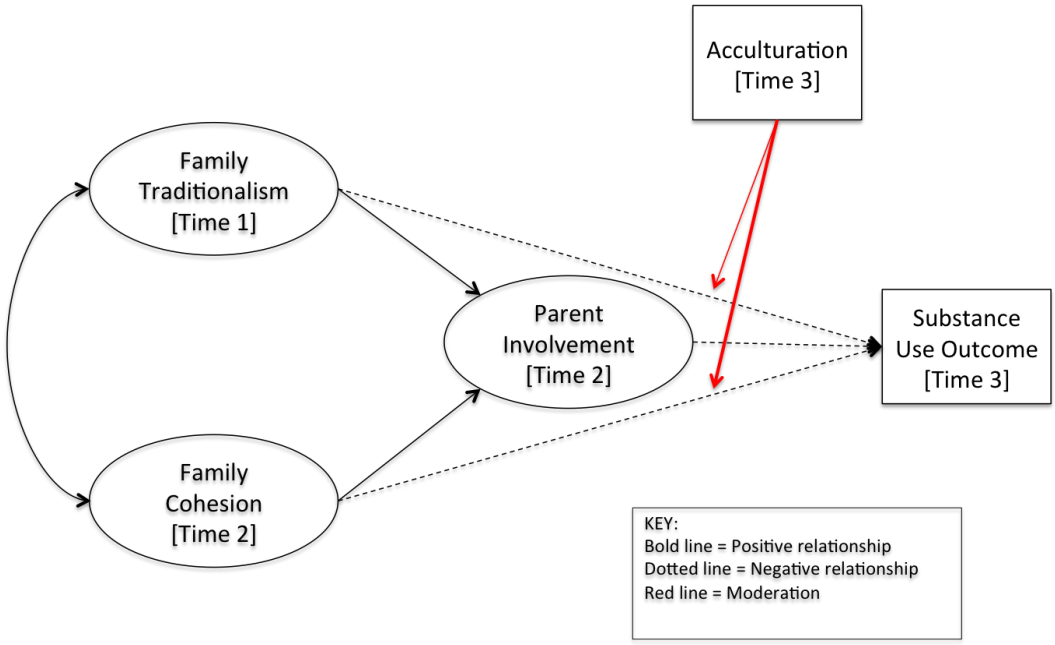
H_6 = Parental involvement will partially mediate the relationship between family traditionalism and family cohesion on youth substance use.

AIM 4: To examine whether acculturation moderates the effects of family traditionalism and family cohesion on youth substance use.

H_7 = The protective effects of family traditionalism and family cohesion on youth substance use will decrease for youth that exhibit higher levels of acculturation

Figure 2.

Hypothesized Model



Structural Equation Model Assumptions

Before estimating the hypothesized measurement and structural models, several assumptions had to be met. Assumptions of SEM include sample size greater than 200 participants (Fritz & MacKinnon, 2007; Shadish et al., 2002; Steiger, 1990), temporal precedence has been set, measures that are reliable and valid (Cronbach's alphs >.70), multivariate normality, and appropriate handling of missing data (Kline, 2011; Shadish et al., 2002). Power, which is most affected by sample size, is important in models that examine mediated and moderated effects given the number of parameters that need to be estimated. Power is particularly critical in SEM since it is a large sample technique and is

an assumption that has been met in the present study (Time 1, *N* = 462 parent cases; Time 2, *N* = 411 parent cases; Time 3, *N* = 635 youth cases).

Similar to previous studies, measures for family traditionalism, family cohesion, parent involvement, and acculturation, demonstrated good reliability (Cronbach's alphas >.70; Castro & Hernandez-Alarcon, 2002; Castro et al., 2007; Elek et al., 2006; Gorman-Smith et al., 1996; Hecht et al., 2003; Tolan et al., 1997). As well, special attention was given to the temporal ordering of the variables selected using ecodevelopmental theory and previously published research. Multivariate normality was assessed by examining the skewness and kurtosis coefficients on all of the indicator items (Mardia, 1970) in addition to the factor scores (McDonald & Ringo Ho, 2002).

Missing Data Plan. Missing data may be a problem, particularly in longitudinal studies where participants complete assessments at multiple time points. In SEM, missing data can present numerous problems for power, causal inference, and obtaining reliable estimates. Although there are several methods that address missing data, the use of Full Information Maximum Likelihood (FIML), otherwise known as Maximum Likelihood, to estimate the hypothesized models was deemed sufficient to address the missing data in the current study (Kline, 2008). FIML estimation is a more robust approach to dealing with missing data (Brown, 2006; Shadish et al., 2002). For example, Enders and Bandalos (2001) examined the performance of various missing data methods (i.e., list wise deletion, pairwise deletion, and imputation) and found that FIML was the superior method.

The rationale for utilizing FIML to address the missing data resulted from the assumption of data being Missing at Random (MAR; McDonald & Ringo Ho, 2002). MAR assumes that missing data can be ignored and states that the nature of missingness is not dependent on the outcome, which in this study is youth substance use. The specific source of the missing data in this study resulted from attrition from time one to time two for parent participants as well as the lack of matched parent data for many students.

Model Testing. Given the complexity that is associated with structural equation modeling (SEM) both theoretically and statistically, meeting basic test assumptions is key to model convergence and estimation as well as getting reliable estimates. In addition to meeting model assumptions, there were four key steps taken in the model testing process for every model including model specification, identification, estimation, and evaluation. These testing procedures are discussed further in the results section.

Data Analytic Plan

Using Mplus, SEM was used to estimate the measurement and structural portions of the hypothesized model (Muthen & Muthen, 2011). Structural equation modeling (SEM) is particularly useful when analyzing longitudinal data as it allows for causal inference by estimating relationships among both latent factors and observed variables (Shadish et al., 2002). Although the main indicators (family traditionalism and family cohesion) as well as the mediating variable (parent involvement) were significantly correlated, the correlation and covariance between these measures was expected and is acceptable for the analysis in the current study (see Table 4; Kline, 2011). Before the structural model was tested, it was first important to analyze the measurement models in

relation to the specific latent factors. Models that are solid and robust in the measurement portion are more likely to converge and provide better estimates during the testing of the structural model (Brown, 2006). These steps are detailed in the proceeding paragraphs.

First, measurement models were estimated for the family traditionalism, family cohesion, and parent involvement latent factors. Confirmatory factor analysis deals with the relationship between observed measures (indicators) and latent variables (factors) (Brown, 2006) and is a kind of structural equation modeling technique that assesses how well measures load onto a specific factor, specifically their degree of relatedness to an a priori, hypothesized construct (Brown, 2006; Tabachnick & Fidell, 2007). Model fit for all models was assessed using the chi-square (χ^2) statistic, comparative fit index (CFI), and the root mean square error of approximation (RMSEA). The chi-square statistic tests whether factor loadings, variances, and residual variances are valid in the current model (Byrne, 2012). The RMSEA assesses how well the hypothesized model fits the data while the CFI "estimates the proportion of covariances in the sample data matrix explained by the model" (Kline, 2011, p.207). RMSEA values of 0.06 or less and CFI values of 0.95 indicate good model fit (Byrne, 2012; Steiger, 1990).

Second, in order to determine whether family traditionalism, family cohesion, and parent involvement loaded onto a distinct latent construct, second order CFA's were conducted using the family traditionalism and family cohesion latent variables together. Although some multicollinearity is taken into consideration with SEM modeling, rationale for the CFA's were based on the overlap in their measurement of familial processes and potential high correlation between the measures. Variables that are highly

correlated can result in high multicollinearity, or singularity, which means that variables are too strongly correlated and are measuring the same underlying concept.

Third, the hypothesized structural equation model was estimated using Mplus (Muthen & Muthen, 2011). Full Information Maximum Likelihood (FIML), otherwise known as Maximum Likelihood (ML), was used to estimate these models. Parameter estimates and standard errors were obtained using covariance and correlation matrices. Mediated effects were tested using the products of coefficients test, which has been posited to be a better test of mediation compared to Baron and Kenny's (1986) causal steps process (MacKinnon, 2008). The product of coefficients "computes the mediated effect as a product of the â and $\hat{b}$ coefficients (Fairchild & Mackinnon, 2009, p3.). In the current study, a single mediator model was estimated using ML. All of the direct paths from family traditionalism and family cohesion to parent involvement (Hypotheses 2 and 3) and substance use (Hypothesis 4) were specified and tested for significance, as well as all of the specific indirect, mediated paths through parent involvement (Hypotheses 5 and 6). Model fit was assessed using the chi-square (χ^2) statistic, the CFI, the RMSEA.

Fourth, separate models examined the moderating effect of acculturation on family traditionalism and family cohesion on youth substance use (see Figure 2). The moderating effect of acculturation on the direct pathways from family traditionalism and family cohesion (Hypothesis 7) to substance use was estimated. Given the issues with power, separate models were conducted that tested the interaction between family traditionalism and acculturation on youth substance use. All three of the acculturation

items in addition to the main effects were centered in order to provide better interpretability and model estimation (MacKinnon, 2008; Fairchild & MacKinnon, 2009).

Although acculturation has been associated with loss of traditional family values as well as lower family cohesion (Baer and Schmitz, 2007; Gil et al., 2000; Miranda et al., 2000; Gil & Vega, 1996; Vega et al., 2003), there was a possibility of the interaction effect not being significant. For example, acculturation in this study was measured linguistically. Contextually, Arizona is an English only state and may lead to a large majority of youth that have English language preferences, resulting in low variability in the moderator. Further, the differential level of acculturation in this sample as well as questionable merit conceptually (testing youth acculturation measure on parent measure) provides rationale for not including this relationship in the primary findings. As a result, the interaction effect was excluded from the models testing the total direct and indirect effects.

Thus far the aims and analytic plan for this dissertation study have been discussed in depth. In Chapter 4, the results for all four aims are presented followed by the Discussion and Conclusion in Chapter 5. Chapter 4 provides basic demographic information on the sample for this study and provides rationale for decisions that were in testing the studies hypotheses.

CHAPTER 4

RESULTS

The purpose of this chapter is to present descriptive statistics from the sample and main findings from the measurement and structural models. Measurement model statistics from the three latent factors are presented as well as confirmatory models that explored whether family traditionalism and family cohesion loaded onto a single construct (Hypothesis 1). Following the latent factor measurement models, findings from the structural portion of the hypothesized model are presented. This particular section details the effects of family traditionalism and family cohesion on parent involvement (Hypotheses 2 and 3) as well as the direct and indirect effects of family traditionalism, family cohesion, and parent involvement on youth substance use (Hypotheses 2-6). Finally, the moderating effect between acculturation and family cohesion and family traditionalism on substance use is also presented (Hypothesis 7). Please see Figure 2 for a depiction of the hypothesized model.

Sample Description

Descriptive statistics for the sample are presented in Tables 1 and 2. The sample consisted of 48% male and 50% female youth (M = 1.51, SD = .50) respectively. The mean age for youth was between 12 and 13 years of age (M_{age} = 6.19, SD = .52) while it was 38 years of age for parents (M = 38.54, SD = 6.87). Seventy eight percent of youth were born in the U.S. while 20% were born in Mexico. A majority of mothers were born in Mexico (62%) while 28% were born in the U.S. (M = 1.81, SD = .62). Similar to mothers, most fathers were born in Mexico (78%) compared to those born in the U.S.

(22%; *M* = 1.90, *SD* = .65). As well, most youth had spent their entire lives living in the U.S. (66%), with 20% of the sample having lived in the U.S. ten years or less (*M* = 4.40, *SD* = .99). Although demographic data is available on the fathers in the sample, it is important to note that the participants that completed the survey questionnaire for this study were predominately female and of Mexican heritage

Regarding parent education, 39% of fathers completed high school while only 16% went to or finished college. For mothers, 41% completed high school while 20% went to or finished college. Specific to family household size, 80% of families had between 4 and 7 family members in the household.

Youth substance use was relatively low in this sample, which was expected given the young age of adolescent participants in this study. Alcohol and marijuana were used more than cigarettes, which coincide with what has been reported at the national level (Johnston et al., 2014). The highest average for any of the substance use outcomes investigated was for lifetime alcohol use (*M* = 2.67, *SD* = 1.99) and lifetime marijuana use (*M* = 1.86, *SD* = 1.76; see Table 2 below).

Specific to the latent factors, the average scores on the family traditionalism (*M* = 4.23, *SD* = .58), family cohesion (*M* = 3.26, *SD* = .49), and parent involvement (*M* = 2.77, *SD* = .27) scales were relatively high. In terms of acculturation, youth on average spoke mostly English or both English and Spanish (*M* = 4.40, *SD* = .99; see Table 3 on page 80).

Table 2.
Descriptive Statistics for Dependent and Independent Variables

Variables	Mean (SD)	Range Min	Range Max	N
Dependent Variables				
Alcohol Past 30-day Use Amount	1.71 (1.37)	1	7	626
Alcohol Past 30-day Use Frequency	1.54 (1.16)	1	7	623
Alcohol Lifetime Use	2.67 (1.99)	1	7	618
Cigarette Past 30-day Use Amount	1.19 (.81)	1	7	626
Cigarette Past 30-day Use Frequency	1.20 (.87)	1	7	625
Cigarette Lifetime Use	1.51 (1.25)	1	7	620
Marijuana Past 30-day Use Amount	1.55 (1.45)	1	7	626
Marijuana Past 30-day Use Frequency	1.42 (1.25)	1	7	624
Marijuana Lifetime Use	1.86 (1.76)	1	7	623
Independent Variables				
Family Traditionalism 1: family history	4.23 (.86)	1	5	443
Family Traditionalism 2: staying at home taking care of family	3.77 (1.09)	1	5	438
Family Traditionalism 3: loyal to family	4.43 (.03)	1	5	439
Family Traditionalism 4: celebrations add meaning	4.28 (.04)	1	5	443
Family Traditionalism 5: preserve customs	4.19 (.85)	1	5	442
Family Traditionalism 6: visit parents as an expression	4.45 (.72)	1	5	444
Family Traditionalism 7: good life spent w/ family	4.25 (.85)	1	5	444
Family Traditionalism Scaled	4.23 (.58)	1	5	428
Family Cohesion 1: family members feel close to each other	3.30 (.63)	1	4	442
Family Cohesion 2: easily think of things to do as family	3.33 (.61)	1	4	442
Family Cohesion 3: family members ask each other for help	3.19 (.72)	1	4	441
Family Cohesion 4: I listen what family members say	3.22 (.67)	1	4	445
Family Cohesion 5: family members like to spend free time w/ each other	3.37 (.58)	1	4	445
Family Cohesion Scaled	3.26 (.49)	1	4	434

Table 3.
Descriptive Statistics for Mediator, Moderator, and Covariates

Variables	Mean (SD)	Range Min	Max	N
Mediator				
Parent Involvement 1: know what they're doing when home	2.89 (.32	1	3	405
Parent Involvement 2: like to get involved in family activities	2.66 (.49)	1	3	404
Parent Involvement 3: listen to child when they want to talk	2.86 (.37)	1	3	404
Parent Involvement 4: do things together when both home	2.64 (.49)	1	3	401
Parent Involvement 6: have friendly chats with child	2.30 (.66)	1	3	404
Parent Involvement 7: talk about how they are doing in school	2.72 (.46)	1	3	405
Parent Involvement Scaled	2.77 (.27)	1	3	397
Moderator				
Acculturation 1	3.04 (1.15)	1	5	627
Acculturation 2	2.34 (.94)	1	5	627
Acculturation 3	2.43 (1.01)	1	5	623
Acculturation Scaled	2.60 (.84)	1	5	620
Covariates				
Gender: Male=1 Female=0	1.51 (.50)	1	2	830
Age	6.19 (.52)	1	9	831
Time Spent in the United States	4.40 (.99)	1	5	828
Mother Birthplace	1.81 (.62)	1	3	819
Father Birthplace	1.90 (.65)	1	3	813
Parent Treatment Condition	2.14 (.78)	1	3	411
Youth Treatment Condition	1.98 (.80)	1	3	630

Confirmatory Factor Analysis: Latent Variable Measurement models

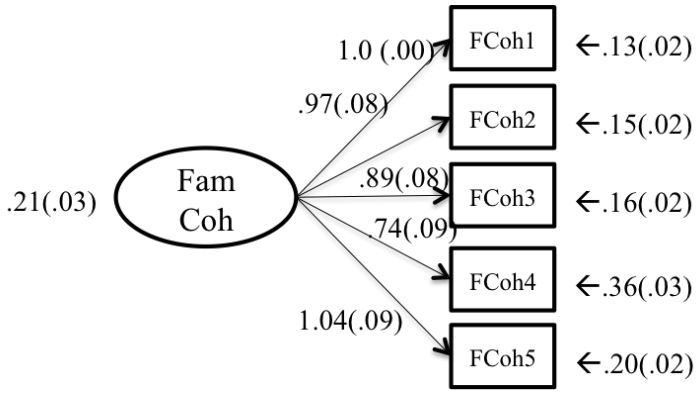
Three measurement models were estimated and included family traditionalism, family cohesion, and parent involvement. First, each measurement model was specified and tested for identification. The structural model is more "parsimonious that the measurement model" when it is over identified (Brown, 2006, p.52) and is assessed using the t-rule, or tracing method. The t-rule requires that there are more known parameters than unknown parameters in the model, which would indicate that the model is over identified. Identification ensures the model has enough degrees of freedom to estimate and over identification is preferred. In the current study, all of the latent factor measurement and structural models were identified or over identified using the t-rule. Further, all models were estimated using Maximum Likelihood (ML) and were evaluated using global and local fit indices to assess how well the model fit the data.

Family Cohesion. The Family cohesion measurement model was initially under identified and was estimated using all six items. Item six in particular had conceptual similarities to other items in the scale. As well, the family cohesion measurement model did not meet the assumption of model identification. As a result, item six was taken out of the analysis. Once item six was dropped, the model became identified and model fit was improved during the estimation process (see Figure 3 below for graphical depiction of the measurement model). As well, item one was the marker indicator since it had the highest variance and estimate compared to the other indicators (Byrne, 2012; Kline, 2011) and the measurement model provided an adequate fit to the data, $\chi^2(10) = 458.24$, $p < 0.001$; CFI = 0.99; RMSEA = 0.00; SRMR = .01. All standardized and unstandardized loadings

as well as error co-variances for each item, along with their standard errors, are reported in Table 4 on page 85.

Figure 3.

Revised Family Cohesion CFA

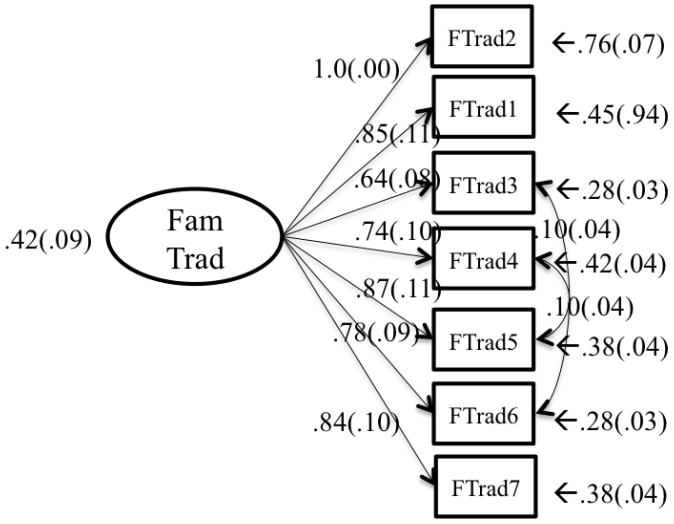


Family Traditionalism. The family traditionalism measurement model was over identified and was initially estimated using eight items from the family traditionalism scale. Item eight presented a conceptual and statistical issue due to its relatedness to items three and six, which were questions specific to family loyalty. As a result, item eight was dropped from the measurement model. As well, the residuals from items four and five were allowed to co-vary given their conceptual similarity. These questions in particular asked about attitudes towards customs and celebrations in the family. Lastly, the residuals from items three and six were allowed to co vary since they both asked about loyalty to the family. Item two was specified as the marker indicator since this variable had the highest variance and estimate compared to the other indicators. Once the aforementioned decisions were made specific to dropping item eight and allowing certain residuals to co-vary, model fit improved and provided an adequate fit to the data, $\chi^2(28) = 561.73$, $p <$

0.001; CFI = 0.99; RMSEA = 0.04; SRMR = .03. Please see Figure 4 below for a graphical depiction of the family traditionalism measurement model. All standardized and unstandardized loadings for each item, standard errors, and residual variances are also reported in Table 4 on page 85.

Figure 4.

Revised Family Traditionalism CFA



Parent Involvement. The parent involvement measurement model was over identified. Given that the parent involvement measure was normed off of American middle class standards of parenting, one of the items was deemed to not be salient to the current sample. Item five, which asked whether parents went to sporting events or to the movies with their kids, may not be culturally appropriate in the current study and was taken out of the analysis. Item five does not necessarily capture the process of parent involvement in this sample and also had some similarity to item two (i.e., family

activities). Further, item six was specified as the marker indicator. The residuals of items two and four and residuals of items three and seven were allowed to co-vary due to their conceptual similarities. Items three and four asked about whether parents did things with their children. Items three and seven asked about whether parents talked with their children about certain things. After all of the aforementioned decisions were made, model fit improved and provided an adequate fit to the data, $\chi^2(15) = 322.48$, $p < 0.001$; CFI = 0.99; RMSEA = 0.08; SRMR = .04. Please see Figure 5 below for a graphical depiction of the model. All standardized and unstandardized loadings as well as error co-variances for each item, along with their standard errors, are also reported in Table 4 on page 85.

Figure 5.

Revised Parent Involvement CFA

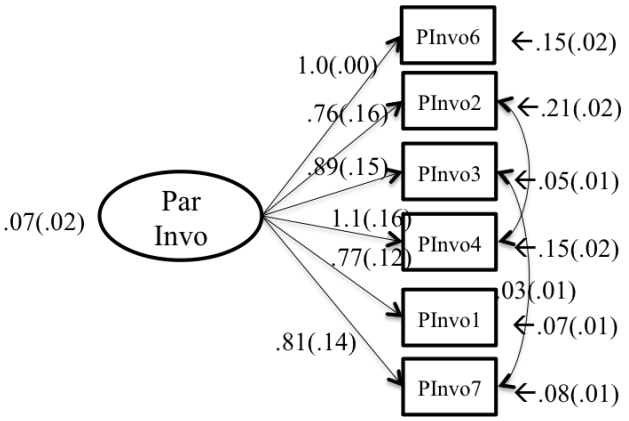


Table 4.
Revised Standardized and Unstandardized Loadings for Single CFA Models

Item	Family Cohesion (*N* = 280) *β (SE)*	b (SE)	Family Traditionalism (*N* = 280) *β (SE)*	b (SE)	Parental Involvement (*N* = 259) *β (SE)*	b (SE)
Family Cohesion						
1. Family members feel close to each other	.78 (.03)***	1.0 (--)				
2. easily think of things to do as family	.75 (.04)***	.97 (.08)***				
3. Family members ask each other for help	.71 (.04)***	.89 (.08)***				
4. I listen what family members say	.49 (.05)***	.74 (.10)***				
5. Fam members like spend free time w each other	.73 (.04)***	1.04 (.09)***				
Family Traditionalism						
1.Family history			.64 (.05)***	.85 (.11)***		
2.Staying at home taking care of family			.59 (.05)***	1.0 (--)		
3.Loyal to family			.62 (.05)***	.64 (.08)***		
4.Celebrations add meaning			.59 (.05)***	.74 (.10)***		
5.Preserve customs			.68 (.04)***	.87 (.11)***		
6.Visit parents as an expression			.69 (.04)***	.78 (.09)***		
7.Good life spent w family			.66 (.04)***	.84 (.10)***		
Family Traditionalism4 WITH Family Traditionalism5			.27 (.07)***	.11 (.03)***		
Family Traditionalism3 WITH Family Traditionalism6			.02 (.08)	.00 (.02)		
Parent Involvement						
1.Know what they're doing when home					.59 (.05)***	.77 (.12)***
2.Like get involved in family activities					.42 (.06)***	.76 (.16)***
3.Lstn to child when want to talk					.68 (.05)***	.89 (.15)***
4.Do things together when both home					.62 (.05)***	1.11 (.16)***
6.Friendly chat w child					.56 (.06)***	1.0 (--)
7.Talk about how they're doing school					.59 (.06)***	.81 (.14)***
Parent Involvement2 WITH Parent Involvement4					.26 (.07)***	.05 (.01)***
Parent Involvement3 WITH Parent Involvement7					.04 (.10)	.00 (.01)

*p < .05; **p < .01; ***p < .001

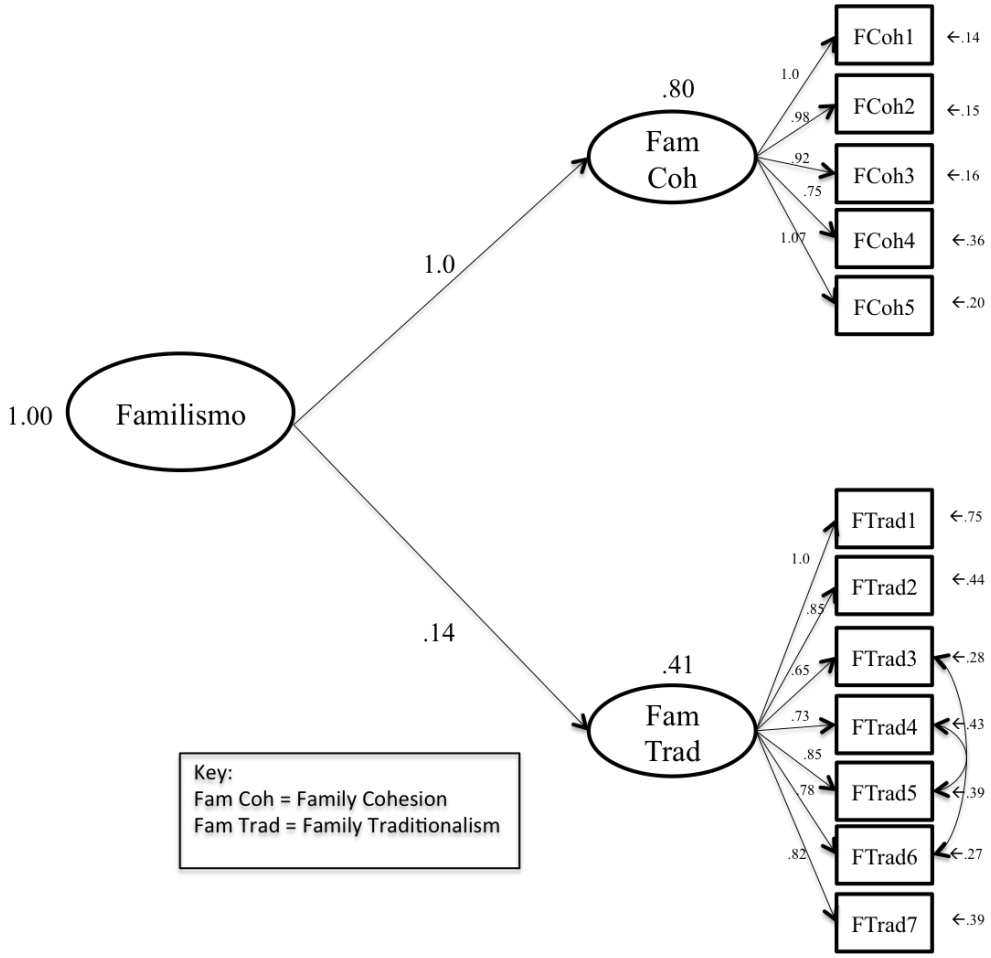
Second Order Confirmatory Factor Analysis: Familismo

Two second order CFA measurement models were explored in order to determine whether the latent factors of interest comprised a higher order construct, conceptualized here as familismo. Both of the second order CFA's that were conducted demonstrated the best model fit out of any of the measurement or structural models tested in the current study. The limitations of the current data and complexity surrounding the measurement model presented convergence problems once the direct effects to substance use were specified. The proceeding sections present results from the second order CFA that included family traditionalism and family cohesion followed by the second order CFA that included all three of the latent factors in the model.

Family Traditionalism and Family Cohesion. The second order CFA that modeled family traditionalism and family cohesion as main indicators of the higher order factor (familismo) demonstrated good model fit ($\chi^2(51) = 70.04$, $p < 0.05$; CFI = 0.98; RMSEA = 0.037; SRMR = .04; see Table 23 in Appendix A for the correlation matrix). Upon observation of the correlation matrix, it is concluded that there are two distinct constructs that make up the higher order factor (see Figure 6 below). A subsequent model that specified direct effects of the higher order factor on parent involvement and substance use was conducted, however the model did not converge.

Figure 6.

Family cohesion and Family Traditionalism Second Order CFA



Structural Equation Model

Following the aim of this research study, the direct and indirect effects of family cohesion, family traditionalism, and parent involvement as distinct latent factors on substance use were analyzed. These models did not include the acculturation moderation effect but are discussed following the presentation of findings from the structural models. Since latent factors

are typically considered common or related factors, there is expected correlation between them (McDonald & Ringo Ho, 2002). In the current study, family cohesion and family traditionalism have conceptual similarities and were significantly correlated with each other. Both of these latent factors were therefore allowed to co-vary, which improved model fit throughout all of the models. Since mediated and moderated effects were explored, the effect size, standardized betas and associated significance levels for direct (X to M to Y relationship, or direct effect) and indirect effects (X to Y relationship, or total effect), are reported (Fairchild & MacKinnon, 2009; MacKinnon, 2008).

Past 30-day Alcohol Use Amount

Direct Effects. The hypothesized model demonstrated adequate fit to the data, $\chi^2(270) = 395.86$, $p < .001$: CFI = .92; RMSEA = .042 (.03 – 05); SRMR = .058 (see Table 5 below for all direct and indirect effects with standardized and unstandardized loadings as well as Figure 7 for a graphical depiction of the model). There were two significant direct effects. Family cohesion was inversely and significantly associated with past 30-day alcohol use amount ($\beta = -.21$, $p < 0.05$). Family traditionalism was also significantly associated with past 30-day alcohol use amount, however the effect was positive ($\beta = .21$, $p < 0.05$). Although the relationship between parent involvement and past 30-day alcohol use amount was not significant, the inverse direction of the effect was as expected ($\beta = -.03$, $p > 0.05$).

Indirect Effects. There were no significant indirect effects, however the inverse direction of the family cohesion ($\beta = -.01$, $p > 0.05$) and family traditionalism ($\beta = -.001$, $p > 0.05$) indirect effects on past 30-day alcohol use amount were as expected.

Figure 7.

Past 30-day Alcohol Use Amount Structural Model

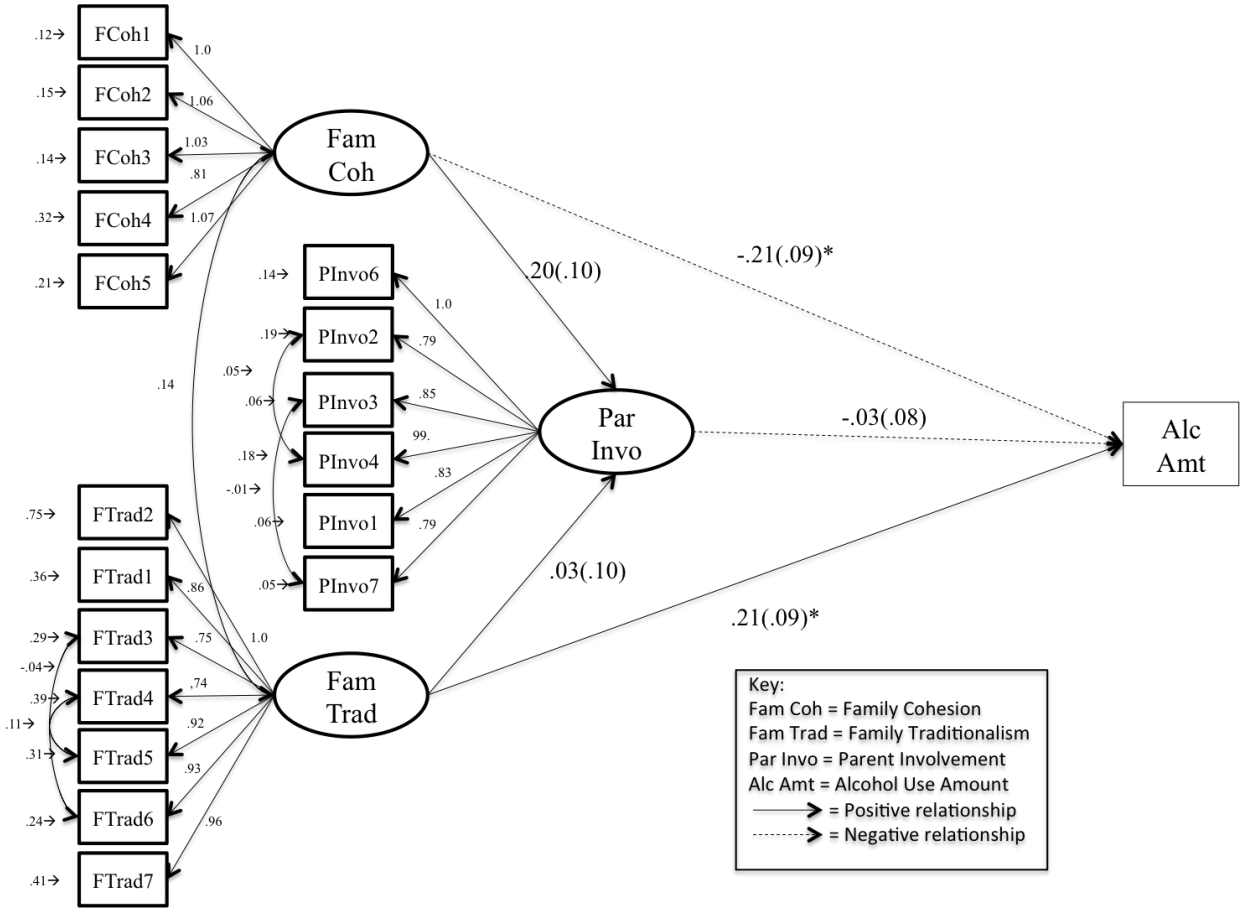


Table 5.
Direct and Indirect Effects: Past 30-day Alcohol Use Amount

Model fit: $\chi^2(270) = 395.86$, p < .001: CFI = .92; RMSEA = .042 (.03 – 05); SRMR = .058
N = 200

	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.03 (.10)	.01 (.04)
Family Cohesion ON Parent Involvement	.20 (.10)	.13 (.07)
Parent Involvement ON Past 30-day Alcohol Use Amount	-.03 (.08)	-.15 (.46)
Family Traditionalism on Past 30-day Alcohol Use Amount	.21 (.09)*	.48 (.22)*
Family Cohesion on Past 30-day Alcohol Use Amount	-.21 (.09)*	-.75 (.35)*
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Past 30-day Alcohol Use Amount THROUGH Parent Involvement	-.001 (.004)	-.002 (.01)
Family Cohesion ON Past 30-day Alcohol Use Amount THROUGH Parent Involvement	-.01 (.02)	-.01 (.02)
Residual for Past 30-day Alcohol Use Amount	.92 (.04)***	1.99 (.21)***

*p < .05; **p < .01; ***p < .001

Past 30-day Alcohol Use Frequency

Direct Effects. The hypothesized model adequately fit the data, $\chi^2(251) = 288.64$, p > .05: CFI = .97; RMSEA = .027 (.00 – 04); SRMR = .056. Although the unstandardized beta coefficient was significant for family cohesion on parent involvement ($b = .14$, $p < 0.05$), the standardized betas were not significant. The direct effect from parent involvement ($\beta = -.06$, $p > 0.05$) and family cohesion ($\beta = -.07$, $p > 0.05$) to past 30-day alcohol use frequency was not significant, however the direction of the effect was as hypothesized.

Indirect Effects. No significant indirect effects were found, however the inverse direction of the family cohesion (β = -.01, p > 0.05) and family traditionalism (β = -.003, p > 0.05) indirect effects on past 30-day alcohol use amount were as expected (see Tables 10 and 11 in Appendix A for all direct effects and indirect effects. See Figure 16 in Appendix B for a graphical depiction of the model).

Lifetime Alcohol Use

Direct Effects. The hypothesized model provided adequate fit to the data, $\chi^2(251)$ = 281.37, p > .05: CFI = .97; RMSEA = .025 (.00 – 04); SRMR = .055. Family cohesion was significantly associated with parent involvement (β = 0.22, p < 0.05). As well, family cohesion was inversely and significantly associated with lifetime alcohol use (β = -.19, p < 0.05). Specific to this effect, only the standardized beta coefficient was significant while the unstandardized coefficient was not. The lack of an unstandardized effect may be attributed to multicollinearity given the significant associations between the main predictors (e.g., family cohesion, family traditionalism, and parent involvement; Kline, 2008). Regarding the direct effect from parent involvement to lifetime alcohol use, there was not a significant relationship. The inverse direction of the effect however was as hypothesized (β = -.30, p > 0.05). See Figure 8 below for a graphical depiction of the model.

Indirect Effects. Although there were no significant indirect effects, the inverse direction of the family cohesion (β = -.01, p > 0.05) and family traditionalism (β = -.001, p > 0.05) indirect effects on lifetime alcohol use were as expected (see Table 6 below for direct and indirect effects).

Figure 8.

Alcohol Lifetime Use Structural Model

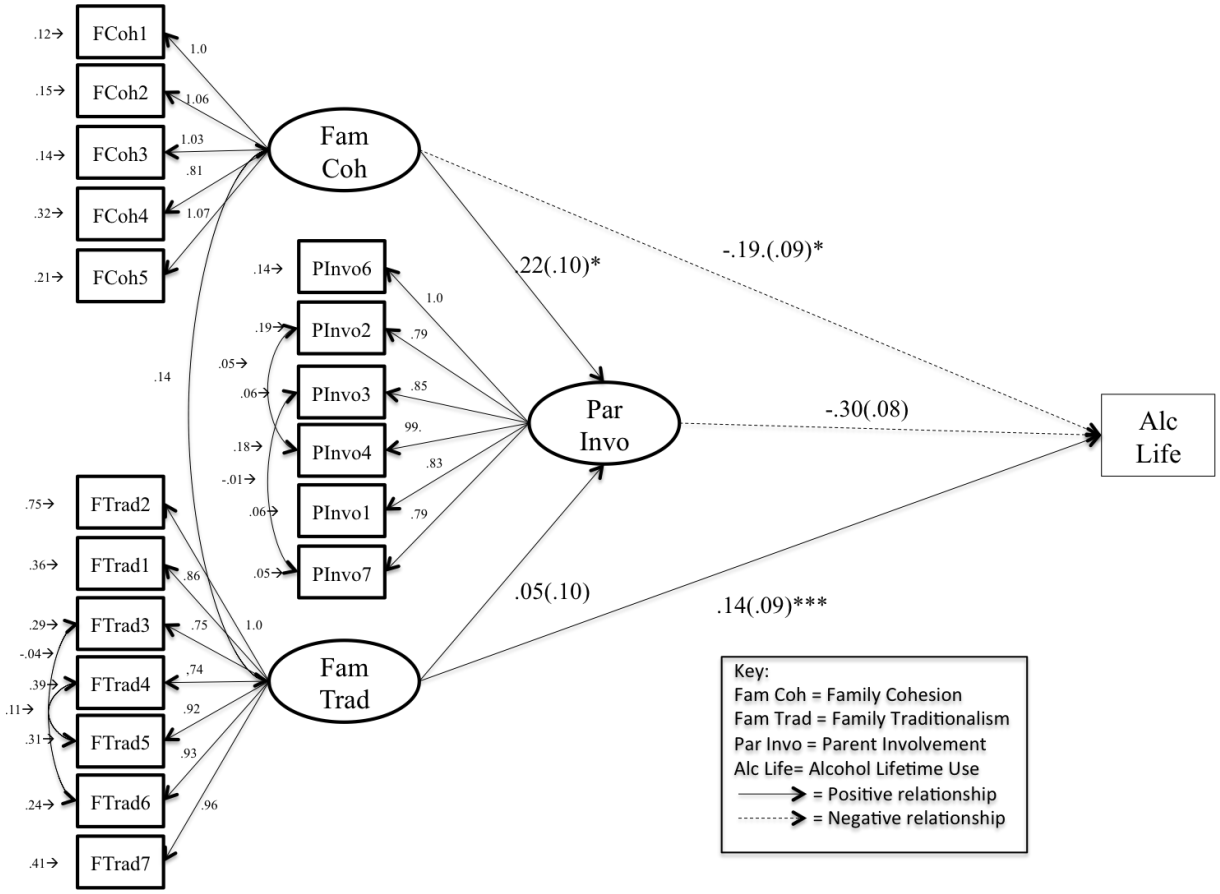


Table 6.
Direct and Indirect effects: Lifetime Alcohol Use

Model fit: $\chi^2(251) = 281.37$, p > .05: CFI = .97; RMSEA = .025 (.00 – 04); SRMR = .055
N = 200

	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.05 (.10)	.02 (.05)
Family Cohesion ON Parent Involvement	.22 (.10)*	.14 (.07)*
Parent Involvement ON Lifetime Alcohol Use	-.30 (.08)	-.23 (.64)
Family Traditionalism on Lifetime Alcohol Use	.14 (.09)	.44 (.31)
Family Cohesion on Lifetime Alcohol Use	-.19 (.09)*	-.91 (.47)
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Lifetime Alcohol Use THROUGH Parent Involvement	-.001 (.01)	-.01 (.02)
Family Cohesion ON Lifetime Alcohol Use THROUGH Parent Involvement	-.01 (.02)	-.03 (.09)
Residual for Lifetime Alcohol Use	.96 (.03)***	3.98 (.41)***

*p < .05; **p < .01; ***p < .001

Past 30-day Cigarette Use Amount

Direct Effects. The hypothesized model demonstrated good fit to the data, $\chi^2(251) = 280.40$, p > .05: CFI = .97; RMSEA = .024 (.00 – 04); SRMR = .055. All standardized loadings, unstandardized loadings, and direct and indirect effects are reported in Table 13 in Appendix A. There was only one significant direct effect between family cohesion and parent involvement ($\beta = 0.22$, $p < 0.05$). The relationship between family cohesion ($\beta = -.13$, $p > 0.05$) and parent involvement ($\beta = -.03$, $p > 0.05$) on past 30-day cigarette use amount was not significant, however the inverse direction of the effects were expected.

Indirect Effects. No significant indirect effects were found, however the inverse direction of the family cohesion (β = -.01, p > 0.05) and family traditionalism (β = -.001, p > 0.05) indirect effects on past 30-day cigarette use amount were as hypothesized.

Past 30-day Cigarette Use Frequency

Direct Effects. The hypothesized model demonstrated good fit to the data, $\chi^2(251)$ = 283.17, p > .05: CFI = .97; RMSEA = .025 (.00 – 04); SRMR = .056. All standardized loadings, unstandardized loadings, and direct and indirect effects are reported in Tables 15 and 16 in Appendix A. There was only one significant direct effect. Family cohesion was significantly associated with parent involvement (β = 0.22, p < 0.05). The effects from family cohesion (β = -.02, p > 0.05) and parent involvement (β = -.08, p > 0.05) to past 30-day cigarette use frequency were not significant, the inverse direction of the effects were expected.

Indirect Effects. There were no significant indirect effects, however the direction of the effects from family cohesion (β = -.02, p > 0.05) and family traditionalism (β = -.004, p > 0.05) to past 30-day cigarette use frequency through parent involvement were as expected.

Lifetime Cigarette Use

Direct Effects. The hypothesized model demonstrated good fit to the data, $\chi^2(251)$ = 276.72, p > .05: CFI = .98; RMSEA = .023 (.00 – 04); SRMR = .055. All standardized and unstandardized loadings and direct and indirect effects are reported in Table 7 below. The effect from family cohesion to parent involvement was the only significant direct effect (β = 0.22, p < 0.05). The direct effects from parent involvement (β = -.09, p > 0.05) and family cohesion (β = -

.14, $p > 0.05$) to lifetime cigarette use were not significant however the inverse direction of said effects were in the expected direction.

Indirect Effects. Although there were no significant indirect effects, the inverse direction of the effect from family cohesion (β = -.02, $p > 0.05$) and family traditionalism (β = -.004, $p > 0.05$) on lifetime cigarette use through parent involvement was as hypothesized. Figure 9.

Cigarette Lifetime Use Structural Model

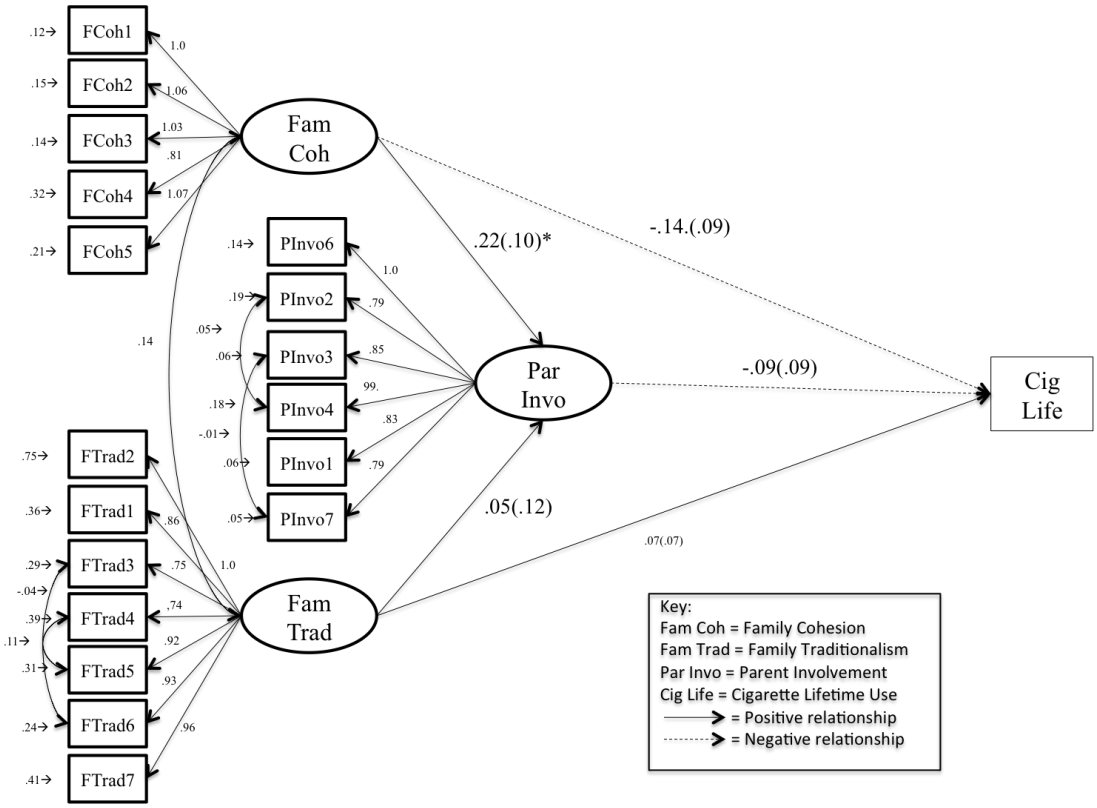


Table 7.
Direct and Indirect Effects: Lifetime Cigarette Use
Model fit: $\chi^2(251) = 276.72$, p > .05: CFI = .98; RMSEA = .023 (.00 – 04); SRMR = .055
N = 200

Parameter Estimate	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.05 (.12)	.02 (.05)
Family Cohesion ON Parent Involvement	.22 (.10)*	.14 (.07)*
Parent Involvement ON Lifetime Cigarette Use	-.09 (.09)	-.16 (.14)
Family Traditionalism on Lifetime Cigarette Use	.09 (.09)	.07 (.07)
Family Cohesion on Lifetime Cigarette Use	-.14 (.09)	-.16 (.11)
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Lifetime Cigarette Use THROUGH Parent Involvement	-.004 (.01)	-.003 (.01)
Family Cohesion ON Lifetime Cigarette Use THROUGH Parent Involvement	-.02 (.02)	-.02 (.02)
Residual for Lifetime Cigarette Use	.97 (.03)***	.24 (.02)***

*p < .05; **p < .01; ***p < .001

Past 30-day Marijuana Use Amount

Direct Effects. The hypothesized model adequately fit the data, $\chi^2(270) = 417.71$, $p < 0.001$; CFI = 0.87; RMSEA = 0.048; SRMR = .09 (see Table 31). All standardized loadings, unstandardized loadings, and direct and indirect effects are reported in Tables 18 and 19 in Appendix A. There was only one significant direct effect from family cohesion to parent involvement ($\beta = 0.20$, $p < 0.05$). The direct effects from family cohesion ($\beta = -.05$, $p > 0.05$) and parent involvement ($\beta = -.08$, $p > 0.05$) were not significant, however the inverse direction of said effects was in the expected direction.

Indirect Effects. No significant indirect effects were found. The inverse direction of the effects from family cohesion (β = -.01, p > 0.05) and family traditionalism (β = -.003, p > 0.05) on past 30-day marijuana use amount through parent involvement were in the expected direction.

Past 30-day Marijuana Use Frequency

Direct Effects. The hypothesized model provided modest fit to the data, $\chi^2(270)$ = 422.14, p < 0.001; CFI = 0.87; RMSEA = 0.048; SRMR = .09. All standardized loadings, unstandardized loadings, and direct and indirect effects are reported in Tables 20 and 21 in Appendix A. The direct effects from family cohesion (β = -.13, p > 0.05) and parent involvement (β = -.06, p > 0.05) were not significant, however the inverse direction of said effects was in the expected direction.

Indirect Effects. The indirect effects from family cohesion (β = -.01, p > 0.05) and family traditionalism (β = -.003, p > 0.05) to past 30-day marijuana use frequency through parent involvement were not significant, however the inverse direction of the relationship was as expected. (β = 0.20, p < 0.05).

Lifetime Marijuana Use

Direct Effects. The hypothesized model demonstrated adequate fit to the data, $\chi^2(270)$ = 324.35, p < 0.05; CFI = 0.95; RMSEA = 0.03; SRMR = .09 (see Table 35). A graphical depiction of the model can be found in Figure 10 below. The direct effects from family cohesion to parent involvement (β = 0.22, p < 0.05) and family cohesion to lifetime marijuana use (β = -.31, p < 0.001) were significant.

Indirect Effects. No significant indirect effects were found, although the direction of the effects were in the hypothesized direction. All standardized loadings, unstandardized loadings, and direct and indirect effects are reported in Table 8 below.

Figure 10.

Marijuana Lifetime Use Structural Model

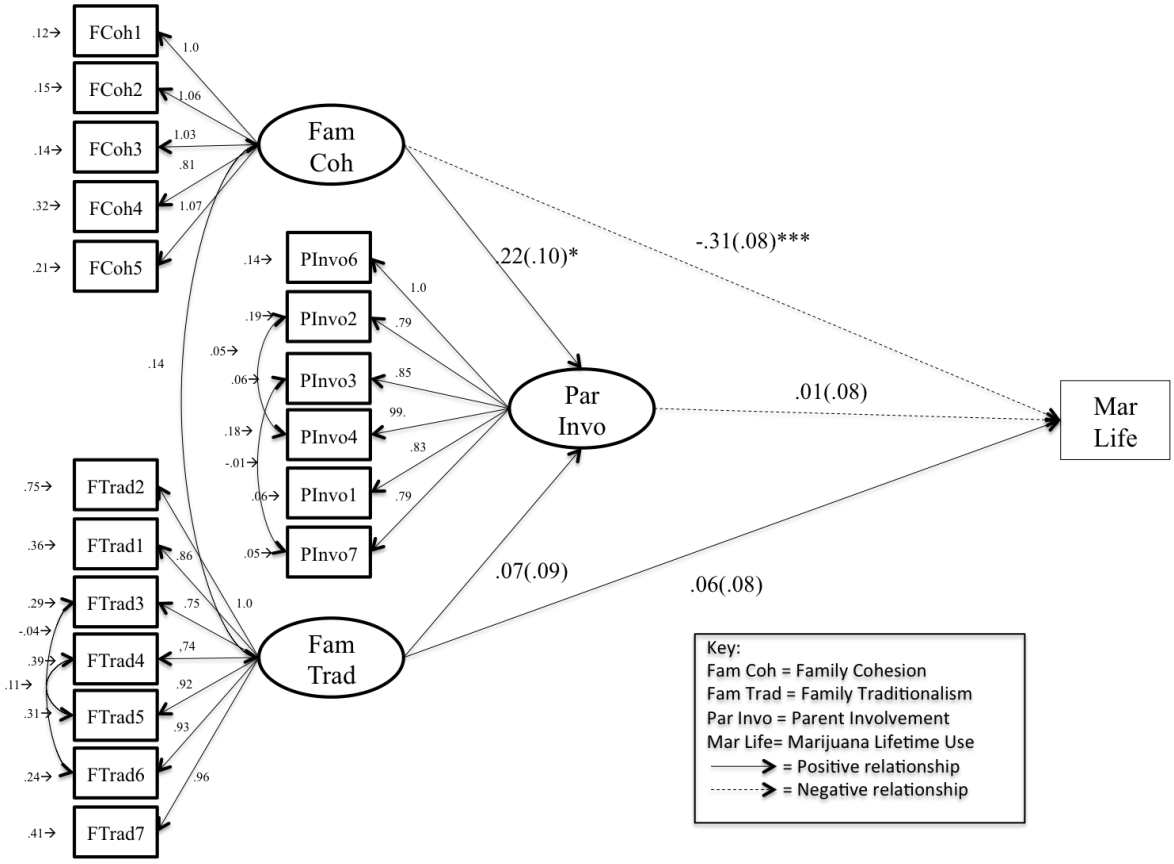


Table 8.
Direct and Indirect Effects: Lifetime Marijuana Use

Model fit: $\chi^2(270) = 324.35$, $p < .05$: CFI = .95; RMSEA = .03; SRMR = .09
N = 194

Parameter Estimate	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.07 (.09)	.03 (.05)
Family Cohesion ON Parent Involvement	.22 (.10)*	.14 (.07)*
Parent Involvement ON Lifetime Marijuana Use	.01 (.08)	.07 (.27)
Family Traditionalism on Lifetime Marijuana Use	.06 (.08)	.12 (.18)
Family Cohesion on Lifetime Marijuana Use	-.31 (.08)***	-.92 (.26)***
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Lifetime Marijuana Use THROUGH Parent Involvement	-.002 (.01)	.002 (.01)
Family Cohesion ON Lifetime Marijuana Use THROUGH Parent Involvement	-.003 (.02)	.01 (.06)
Residual for Lifetime Marijuana Use	.84 (.06)***	1.59 (.17)***

*p < .05; **p < .01; ***p < .001

Moderated Effect of Acculturation

Models that included an interaction between acculturation and family traditionalism on parent involvement and substance use outcomes were analyzed. As well, models that tested the moderated effect of acculturation on family cohesion were also examined. Before any models were tested, the acculturation variables were all centered. A subsequent model specified direct effects on alcohol, cigarette, and marijuana use outcomes. Estimates for these models can be found in tables 33, 34, and 35, respectively, in Appendix A.

Family Traditionalism X Acculturation

There were no significant effects for the acculturation by family traditionalism interaction on any of the alcohol, cigarette, or marijuana use outcomes. There was a significant direct effect between family traditionalism and past 30-day alcohol use amount ($\beta = .46$, $p < 0.05$) and past 30-day marijuana use amount ($\beta = .04$, $p < 0.05$).

Family Cohesion X Acculturation

There were two significant interaction effects on alcohol and cigarette use outcomes for the acculturation by family cohesion interaction. The acculturation by family cohesion interaction was significantly associated with past 30-day alcohol use amount ($\beta = -.82$, $p < 0.05$) and past 30-day cigarette use amount ($\beta = -.24$, $p < 0.05$). Youth who were more acculturated had greater alcohol and cigarette use compared to youth who were less acculturated. As family cohesion went up, substance use decreased for both low acculturated youth and for high acculturated youth. Please see Figure 11 and Figure 12 below for a graphical interpretation of the interaction effect.

Figure 11.

Family Cohesion by Acculturation on Alcohol Use Amount

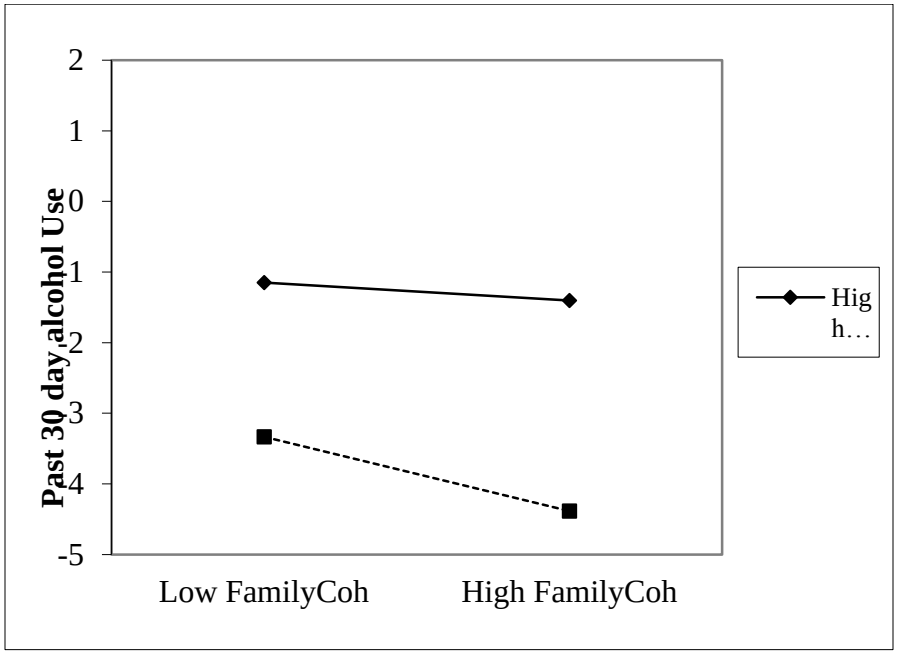
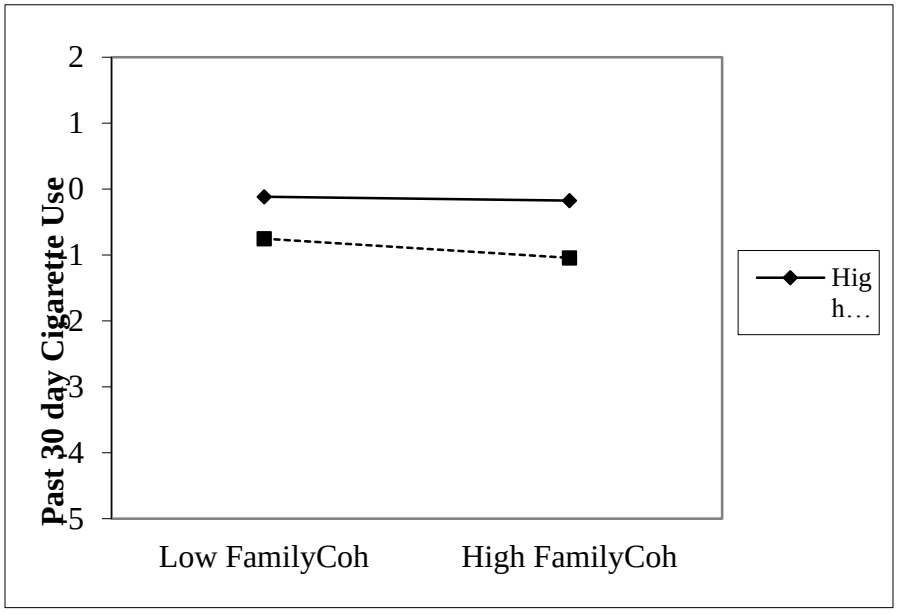


Figure 12.

Family Cohesion by Acculturation on Cigarette Use Amount



Results Summary

Results from the analyses indicate a two-factor structure, defined in this study as familismo. Family cohesion and family traditionalism were both key indicators of familismo. Regarding the direct and indirect effects, family cohesion was protective against alcohol and marijuana use outcomes. Conversely, family traditionalism was positively associated with alcohol use amount, which was counter to what was hypothesized. Finally, acculturation had a significant influence on the relationship between family cohesion and past 30-day alcohol and cigarette use amount. Youth who were lower acculturated had lower substance use compared to higher acculturated youth; as family cohesion went up, substance use decreased for both low and high acculturation groups. The next chapter provides interpretation of these findings and discusses the implications of this study. As well, the limitations associated with this data are discussed in context of the findings.

CHAPTER 5

DISCUSSION AND CONCLUSION

Substance use is one of the major contributors to health disparities in the Latino population (Alegria et al., 2012; Isaac, 2013; SAMHSA, 2011). The national and state statistics surrounding youth substance use are disconcerting given the association between early adolescent substance use (<15 years of age) and deleterious public health, social, and economic outcomes (Benard, 2004; Office of the Surgeon General, 2007; Zucker, 2006). Latino youth in particular are an at-risk group for substance use, negative educational outcomes, and other health risk behavior. Thus, intervening with this group is critical in preventing or delaying substance use. As well, targeting this group is especially important given the overall growth in the Latino population over the past couple decades. Further, considering that Latino's are projected to make up about 30% of the total U.S. population by 2050 (Census Bureau, 2010; Pew Hispanic Center, 2011), intervening in communities early with the systems that directly affect youth (e.g., families, schools, publicly funded health systems) and their families may help mitigate the negative outcomes that stem from substance use (SAMHSA, 2011).

In order to fill a gap in the literature, the current dissertation study utilized an ecodevelopmental framework to investigate the relationship between family traditionalism, family cohesion, parent involvement, acculturation, and youth substance in a sample of predominately Mexican heritage youth and parents. The first aim examined whether family traditionalism and family cohesion were indicators of familismo. It was hypothesized, based on previous research as well as ecodevelopmental

theory, that family cohesion and traditionalism would be key facets of familismo. This hypothesis was confirmed in the current study and suggests that familismo is indeed a multifaceted process that is comprised of various components, but most importantly, that culture and family are nuanced processes. This study is one of the first to examine whether family traditionalism and family cohesion are components of the familismo.

Given that familismo is such a multifaceted and complex construct, various behavioral and attitudinal measures that capture the various aspects of familismo may help elucidate not only the specific facets that makeup this concept but assist in the causal modeling of familismo in order to determine whether it is protective for youth against risky behavior. This finding has important implications regarding the conceptualization and measurement of cultural and familial processes in Latino populations, especially since this study suggests that culture and family are particularly nuanced processes. Measuring culture and family in an accurate manner that is reflective of the population may therefore help researchers better understand what familismo looks like for Latino families and how it influences youth development and behavior, which is particularly important among Mexican heritage families (Livas-Stein et al., 2012; Marin, 1993).

Specific to the second and third aims, it was hypothesized that family traditionalism and family cohesion would positively influence parent involvement and that all three previously mentioned processes would be protective for youth against substance use. The results for these two aims were mostly expected, with one unexpected finding. First, family cohesion was protective against alcohol and marijuana use for youth. This finding corresponds with previous research on family cohesion as a

protective factor against risky substance use among Latino youth (Coker & Borders, 2001; Deng et al., 2006; Kopak et al., 2012; Marshal & Chassin, 2000; Nash et al., 2005; Olson et al., 1979; Olson et al., 1982; Roosa et al, 1996). Family cohesion is considered one of the most influential processes for Latino youth (Behnke et al., 2008) and may be protective due to the structure it provides for children. From an ecodevelopmental standpoint, this structure may help children and parents build their relationships and increase social support for youth. As a result of positive parent child relationships, substance use risk may decrease.

Overall, this study supports other research that suggests family cohesion is not only a critical familial and cultural process for Latino youth (Behnke et al., 2008; Marsiglia et al., 2009; Miranda et al., 2000; Reeb et al., 2005), but is also an important protective factor for adolescents against substance use (Deng et al., 2006; Gil et al., 1998; Kopak et al., 2012; Marsiglia et al., 2009; Roosa et al., 1996; Unger et al., 2009; Vega & Sribney, 2003). In addition to the direct effects on substance use, family cohesion was positively associated with parent involvement across alcohol, cigarette, and marijuana use outcomes. This finding may suggest that parents are more involved in their children's lives when families are more cohesive. Families that exhibit greater family cohesion may help establish trust and social support between youth and parents, which are also important components of parent involvement, can aid in the development of positive parent-child relationships, family functioning, and resiliency among youth (De La Rosa & White, 2001; Pilgrim et al., 2006).

An unexpected finding specific to aim two was the positive association between family traditionalism and past 30-day alcohol use amount. Although it was hypothesized that family traditionalism would be protective for youth against substance use, the unexpected inverse direction of this relationship suggests that family traditionalism was a risk factor for alcohol use. This finding did not support previous research, which has found family traditionalism to be protective against substance use among youth as well as strengthen the family (Castro et al., 2007; Castro et al., 2009; Gil et al., 2000; Gonzales et al., 2008).

Since the current sample was predominately Mexican heritage, the positive association between family traditionalism and alcohol use must be interpreted in the context of what traditional cultural norms mean in this population. Traditional cultural norms provide a blueprint for how one should behave and act not only within the family but also in society (Castro & Coe, 2007) and are typically agreed upon and are endorsed by both Mexican men and women (Martinez et al., *in press*; Medina-Mora & Rojas-Guiot, 2003). Specific to substance use, heavy drinking and drinking in certain social situations is viewed as a permissible thing to do, particularly for men (Felix-Oritz, Villatoro-Velazquez, Medina-Mora, & Newcomb, 2001; Kulis, Marsiglia, & Hurdle, 2003). Therefore, the norm is to drink alcohol since it is a constant at social gatherings and celebrations. The perception towards social drinking in this population may help explain why there was only one significant effect between family traditionalism and alcohol use amount. Although this finding is important, it must be interpreted with caution.

For example, the modeling of parent measures on youth outcomes makes it particularly difficult to capture the way familial and cultural processes influence youth behavior. Culture, which is typically expressed through interpersonal relationships, is key in child rearing for Latino's (Azmitia & Brown, 2002; Lorenzo-Blanco et al., 2013) and is an ongoing process that shapes and forms the ways in which one sees the world (Koss-Chioino & Vargas, 1999; Napier et al., 2014). This study indicates that culture is an ongoing process that is particularly nuanced. It may be difficult then to draw a conclusive interpretation since youth perceptions of family traditionalism were not available.

In this vein, the final aim of this study assessed whether acculturation would mitigate the effect of family traditionalism and family cohesion on substance use. It was hypothesized that greater acculturation would decrease the protective effects of family cohesion and family traditionalism on youth substance use. The only significant moderation effects found were specific to family cohesion. For past 30-day alcohol and cigarette use amount, substance use was higher among the higher acculturated youth. However, for both low and high-acculturated youth, substance use decreased as family cohesion increased.

Although this study found that greater acculturation was a risk factor for substance use, which falls in line with previous research (Caetano & Clark, 2003; De La Rosa et al., 2005; Epstein et al., 2001; Santisteban et al., 2012; Szapocznik et al., 2007; Warner et al., 2006), family cohesion was protective for both low and high acculturated youth. The significant findings specific to family cohesion are also similar to previous studies (Gil & Vega, 1996; Marsiglia et al., 2009; Martinez, 2006; Miranda et al., 2000;

Prado et al., 1993). Considering the stress that is associated with adjusting to a new culture, families may become more reliant on each other for support. For youth, their experiences with regard to acculturation tend to occur at a faster pace compared to their parents and may have an impact on the protective influence of specific familial and cultural processes as a result of acculturation.

From a theoretical standpoint, findings from this study have important implications. Ecodevelopment posits that familial and cultural processes influence each other in direct, indirect, and reciprocal ways. This study provides further understanding regarding the pathways of specific cultural and familial processes on Latino adolescent substance use. For instance, when family cohesion is strong, family functioning may be strengthened. As a result, families may demonstrate better outcomes in a variety of domains including health, academic, and personal relationships. Although this study was missing key ecodevelopmental realms including peer, school, and neighborhood influences, parents can act as a bridge between those realms. For example, parents that are involved in their children's schooling as well as monitoring who their kids are associating with at school on a peer level can help promote resiliency in youth as well as strengthen parent child relationships (Pantin et al., 2003b; Prado et al., 2008). Nevertheless, examining all realms of the ecodevelopmental model can help researchers understand all of the influential forces that impact youth (Martinez et al., under review; Prado et al., 2008).

Social Work Practice Implications

The results from this study have a variety of implications for social work at micro, meso, and macro levels. Specifically, this study can add to the understanding of how cultural and familial mechanisms interact to influence youth substance use, thereby adding critical knowledge to the efforts being taken by the National Institutes of Health (NIH), Substance Abuse and Mental Health Services Administration (SAMHSA), and the Centers for Disease Control and Prevention (CDC). For social work practice, this study provides important guidelines for clinicians and direct practitioners in terms of tailoring their service delivery approach that is culturally and ethnically salient to the target population (Marsiglia et al., 2013; Prado et al., 2008).

For example, social workers who are helping families obtain services and resources may be better able to assess the families' needs and strengths as it relates to preventing or delaying substance use. Findings from this study can also inform prevention and intervention efforts by helping to understand what "at-risk" means within cultural and familial contexts. As a result, intake and assessment as well as service referrals may be more sensitive to cultural, familial, and developmental nuances, which may assist social workers in their approach in working with ethnic minority families. Having an understanding of the interplay between these processes can help social workers develop rapport with youth and families.

Social workers that work directly with Latino families in clinical settings or in the development/adaption of prevention programming can benefit from this study in terms of accounting for cultural and familial dynamics in the assessment and prevention of

substance use. Working with Latino families and communities specifically requires a contextual approach, especially given the heterogeneity between and within Latino sub groups. Conceptualizing and capturing the various aspects of Latino culture specific to the Southwest may allow for the specification of direct service provision that is in the best interest of family well-being and quality of life. As well, this may help inform and develop models that lead to sustainable prevention efforts for Mexican heritage familis in the Southwest.

Given the disproportionate and deleterious effects that substance use has on Latinos, educating the social service delivery system over the next few decades on how best to assess and meet the needs of a demographically changing and growing citizenry is critical. The recent passage and implementation of the Affordable Care Act (ACA) in particular has marked a change in the way that practitioners address behavioral health. Prevention, which has been discussed throughout this study, is a top priority in the ACA. This study can therefore provide valuable knowledge to health care professionals, educators, and other leaders that engage with families, in schools, social service agencies, and with providers who administer and oversee health and mental health programming on critical processes that influence youth substance use. Having an understanding of key influential mechanisms for youth, health care professionals may be better able to serve and communicate within and among those systems on behalf of the Latino families they work with (Alegria et al., 2012).

Social Work Policy Implications

Findings and limitations from this study have important policy and programmatic implications. First, advocating and lobbying policy makers to strengthen programming or provide more resources for at-risk families may assist in promoting positive family functioning and better health outcomes. The stress that comes along with raising children in a foreign culture may impede on family functioning. Families that have access to resources in the community such as prevention programming or other resources that help families out may therefore help in the strengthening of families and development of resilience in youth. Policies that help strengthen families must also address immigration, especially given that the sample for this study was predominately Mexican heritage.

On the national level, immigration policy has critical implications for work with this population. Immigration policy that is geared towards helping families can result in better economic and health outcomes. For example, immigrants provide a substantive contribution to the U.S. economy (Rumbaut & Portes, 2001). However, policies that aim to help families present barriers for families who are not American citizens in terms of accessing services. Policies that allow immigrant families to access key programs and services can promote and strengthen family functioning and resiliency.

Given that the growing Latino population has a large percentage of young people, school based policies that are sensitive to the needs of immigrant families can help youth do well in school, which has large implications for future labor opportunities (Rumbaut & Portes, 2001). Thus, targeting risky behavior in addition to helping improve academic outcomes for Latino youth is particularly important given the high drop out rate in this

population. Preventing or delaying substance use as well as helping Latino kids graduate high school may not only mitigate the contribution that substance use has to health disparities, but also improve economic outcomes.

Over the past three decades, important risk and protective factors for adolescent problem behavior have been identified (Uehara et al., 2014). Specific to prevention of mental health disorders and substance use, the Institute of Medicine (IOM) found several strategies for improving well being including strengthening the family, helping individuals build resilience, and positive promotion of mental health (O'Connell, Boat, & Warner, 2009). Despite the availability of programming that have been found to mitigate numerous deleterious outcomes (e.g., school drop out, drug use, crime), there is still a lack in the use of effective programming in targeting risky behavior (Uehara et al., 2014).

Considering that substance use costs Americans over 500 billion dollars in taxes each year (Miller & Hendrie, 2008; Miller & Hendrie, 2009) and is one of the largest contributors to health disparities among Latino's highlights the need for programming that lowers the likelihood for risky behavior. Prevention efforts that target substance use and are effective may therefore help decrease health disparities and save critical public health resources (Prado & Pantin, 2011; Samhsa, 2011). With that said, effective prevention programming has important economic implications and should be brought to the attention of policy makers and leaders at the local, state, and national level. Specifically, interdisciplinary collaboration, conducting cost-benefit analyses to assess sustainability, and considering the role of culture and family on family functioning and health in ethnic minority communities may help in developing programming that is

effective and long term, which can assist leaders in their decisions to allocate limited resources (Cox et al., 2011; Napier et al, 2014; O'Connell et al., 2009).

Social Work Research Implications

Data from this study come from a partnership with community and academic leaders looking to prevent/delay the onset of substance use for youth as well as to promote parent involvement and family functioning in Latino families. This study provides further understanding regarding the direct effects of culture and family for this population. The complexity and dynamics associated with cultural and familial processes, particularly in light of the developmental growth that occurs during adolescence, makes it difficult to study these processes in a thorough manner when the data are cross-sectional. Despite the use of multiple waves of data in this study, the analytic plan was limited due to non-matching youth and parent measures for family and cultural processes.

As well, future research should assess acculturation in a variety of ways. This study used a linguistic acculturation measure, however language does not capture the entire process of acculturation. Researchers have argued that "language measures do not capture the complexity of language use" among individuals that endorse both Hispanic and American values and that "acquisition of the English language does not necessarily mean sustenance of the Spanish language, or vice versa" (Lara, Gamboa, Kahramanian, Morales, & Hayes-Bautista, 2013, p.221). Changes in values, norms, and behaviors are not captured in linguistic acculturation measures, so capturing the behavioral and attitudinal changes in orientation to American and Latino culture can paint a more

complete picture in what the acculturation process looks like and how it impacts the family and substance use (Schwartz, Unger, Zamboanga, & Szapocznik, 2010).

More importantly, future mixed methods research can help elucidate what culture and family actually mean for the target population. Although measures are available that capture certain family and cultural processes, they may not be generalizable all Latino sub groups. Qualitative research that helps draw out the meaning of culture and family specific to Mexican origin immigrant populations can give researchers a better understanding of the salience of these processes. Qualitative data could provide much more depth to these processes and can aid in the development of reliable measures that are specifically salient to the target population. Mixed methods studies that are theory based can help push not only the literature forward, but contribute to efforts that help ethnic minority families.

Studies that utilize measures that are population and culturally specific can aid in the causal modeling and understand of complex relationships between culture, family, and deleterious risk behavior. In this regard, measures that provide a more complete assessment regarding behavior, attitudes, and values specific to Latino and American culture can help elucidate how these processes interact the way that they do. Further, assessing cultural and familial processes should be done longitudinall, especially. considering that culture is constantly evolving and is influenced by family, community, socio-cultural, and political economic contexts. Studies that therefore attempt to capture change over time can provide further depth and understanding to culture and family. Although studies that follow families over a longer period of time are more resource

intensive, they can help provide data points that observe changes in family, culture, adjustment to mainstream American culture, and substance use.

Study Limitations

There were several limitations in this study that dealt primarily with measurement and missing data issues. All of the variables that were used in this study were missing half of the data and may help explain the non-significant effects that were found. Although there were enough cases in this study to estimate the hypothesized SEM model, the missing data may have reduced power in the model. Maximum Likelihood is an effective means to deal with missing data (Kline, 2011), however other techniques may be necessary to appropriately deal with the large amount of missing data such as imputation, pairwise deletion, and listwise deletion (Kline, 2011; Shadish et al., 2002). Regarding imputation, it was determined that the data was Missing at Random. The use of pairwise deletion and listwise deletion however would have likely reduced power since it takes cases out of the analysis.

From a measurement standpoint, this study utilized previously validated scales that have demonstrated acceptable or modest reliability in previous studies (Cronbach's alpha > .70; Castro & Hernandez-Alarcon, 2002; Castro et al., 2007; Elek et al., 2006; Gorman-Smith et al., 1996; Hecht et al., 2003; Tolan et al., 1997). Both the parent involvement and acculturation measures had the lowest reliability coefficients compared to family cohesion and family traditionalism. This is important to take note of since scales that have lower reliability tend to make statistical models more conservative

(Nunnally & Bernstein, 1994; Iacobucci & Duhachek, 2003). In addition to the potential issues with reliability, several other measurement problems were present.

First, there was not consistent measurement of the family processes across all three waves of data collection. As well, the lack of matching measures specific to family traditionalism, family cohesion, and parent involvement for both parents and youth did not allow this study to examine said constructs for youth. As a result, parent measures were used to predict youth substance use outcomes. Since family cohesion, parent involvement, and family traditionalism were measured from the parents' perspective, there was no way to determine youth perceptions of these key constructs. This is an important limitation to consider given that youth tend to be positively biased and parents tending to overestimate their perceived level of parental investment in their children's lives (Tein, Roosa, & Michaels, 1994).

Developmentally, youth may have different perceptions on family functioning as they age and gain more experiences. Youth as well may not have the maturity or experience necessary to provide an accurate representation of their familial life (Tein et al., 1994). As a result, the findings specific to family traditionalism, family cohesion, parent involvement may be biased and one sided. Regarding capturing familial processes, parents may have a different perspective on the importance of culture, specifically family traditional norms and values, compared to their children. Parents may place more weight onto norms and values that are indicative of Mexican origin traditional culture. Although measuring youths' perceptions of family functioning and its influence on substance use is

ideal, the limited availability of family functioning measures in this study for youth necessitated the use of parent assessments in testing the hypothesized model.

Second, although all of the measures demonstrated modest reliability in the current study, the parent involvement measure may not be salient to the current sample since it was normed off of middle class American standards of parenting. Given that items asked about activities (going to the movies, talking about school, and family activities done together at home) that parents and children did together may not be the best way to assess the process of parent involvement in recent immigrant Latino populations.

Culturally, familial processes that occur in Latino families, particular for recent immigrants or those who have not lived in the U.S. for a long period of time, may be different for these families. Regarding measurement time points, there were only three assessments conducted that were separated by a total of almost eighteen months. Considering the many changes that youth experience throughout adolescence, eighteen months may not be enough time to see the effects that culture and family have on youth development and behavioral outcomes. The availability of additional time points that extend over a longer period of time could provide researchers with the opportunity to really account for the influence of developmental changes along with familial and cultural processes on adolescent behavior and other key functioning outcomes for youth.

Another study limitation was the use of self-administered questionnaires due to the potential self-report bias regarding substance use outcomes. Youth may have provided socially desirable responses to questions, which could have resulted in

systematic error. Systematic error produces bias that may result from acquiescent (marking "disagree" on all of the scale items regardless of what the question is actually asking) and socially desirable responses (participants responding to a question based on what they think is acceptable by society or their peer group). Youth participants may have been inclined to give acquiescent and social desirable responses since completion of surveys took place in a classroom setting.

As well, there may be a lack of heterogeneity in the sample due to the criteria for participation in the study. For example, families may have shared similar characteristics such as socioeconomic status and the community in which they lived, thereby limiting the variability of the data collected. Finally, there was a limitation with the acculturation measure.. Although the use of linguistic acculturation has been found to be a robust predictor of Latino substance use (Valencia & Johnson, 2008), using language to account for acculturation has several limitations. This is discussed further in the social work research implications section. Despite the various limitations of this study, findings from this research have important implications in the areas of social work practice, policy, and research.

Conclusion

This study adds an important contribution to the literature specific to culture, family, and Latino youth substance use and may assist in promoting overall health, stability, and well being for at-risk and underrepresented Latino families. Findings from this study provide critical insight for social workers and other health professionals that work with Latino populations. Given the complexity and scope of behavioral health

problems for this population related to substance use, the results and limitations of this research demonstrates the critical need for interdisciplinary, strengths based, community embedded strategies acting to prevent or delay substance use.

Although substance use has a substantive contribution to Latino health disparities, this study provides important insights into the influence of family and culture on youth substance use. Considering the numerous changes that occur during adolescence and the evolving nature of culture, a more in depth understanding of the causal pathways of family and cultural processes on youth substance use over time is needed. Nevertheless, the practice and policy recommendations resulting from this study provides a deepened understanding of nuances associated with Latino culture, family processes, adolescence, and substance use.

The refinement of clinical and direct practice protocols specific to Latino families may have better salience with the target population and my result in better outcomes over the long term. As well, social workers, teachers, and other professionals that work in school settings can derive a better understanding of their students by tapping into a key strength, most notably their relationship with their parents. School professionals may therefore be able to serve as a strength for the family as well as a bridge to the community. Taken together, this study demonstrates the complexity associated with individual, family, school, community, and cultural factors. With the projected growth over the next several decades in the Latino population, efforts that account for all realms of the ecodevelopmental model in assessing and intervening with at-risk families may help strengthen communities and contribute to better health outcomes in this population.

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APPENDIX A

TABLES 9 – 35

Table 9.
Measurement Model: Past 30-day Alcohol Use Amount

	Standardized β (SE)	Unstandardized b (SE)	Error Variances
Measurement Model Estimates			
Family traditionalism 1	.68 (.05)***	.86 (.13)***	.36 (.04) ***
Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
Family traditionalism 3	.65 (.05) ***	.75 (.11)***	.30 (.04) ***
Family traditionalism 4	.61 (.06) ***	.74 (.12)***	.39 (.05) ***
Family traditionalism 5	.75 (.04) ***	.92 (.13)***	.30 (.04) ***
Family traditionalism 6	.77 (.04) ***	.93 (.13)***	.25 (.04) ***
Family traditionalism 7	.70 (.05) ***	.97 (.14)***	.41 (.05) ***
Family Cohesion 1	.78 (.04) ***	1.0 (--)	.12 (.02) ***
Family Cohesion 2	.74 (.04) ***	1.01 (.11)***	.15 (.02) ***
Family Cohesion 3	.74 (.04) ***	1.02 (.11)***	.16 (.02) ***
Family Cohesion 4	.52 (.06) ***	.81 (.13)***	.32 (.04) ***
Family Cohesion 5	.69 (.05) ***	1.07 (.12)***	.22 (.03) ***
Parent involvement 1	.66 (.05) ***	.83 (.13)***	.06 (.01) ***
Parent involvement 2	.43 (.07) ***	.79 (.17)***	.19 (.02) ***
Parent involvement 3	.67 (.06) ***	.85 (.15)***	.06 (.01) ***
Parent involvement 4	.53 (.07) ***	.99 (17)***	.18 (.02) ***
Parent involvement 6	.67 (.06) ***	1.0 (--)	.14 (.02) ***
Parent Involvement 7	.56 (.08)***	.79 (.13)***	.06 (.01)***
Family Traditionalism WITH Family Cohesion	.50 (.07)***	.14 (.03)***	
Covariates			
Time spent in the U.S.	-.03 (.07)	-.04 (.09)	
Age	.14 (.07)	.45 (.25)	
Mom birthplace	-.03 (.09)	-.03 (.11)	
Dad birthplace	-.09 (.09)	-.09 (.09)	
Parent Condition	.06 (.08)	.02 (.03)	
Youth Condition	.09 (.07)	.17 (.14)	

*p < .05; **p < .01; ***p < .001

Table 10.
Measurement Model: Past 30-day Alcohol Use Frequency

	Standardized *β (SE)*	Unstandardized b (SE)	Error Variances
Measurement Model Estimates			
Family traditionalism 1	.70 (.05)***	.88 (.13)***	.36 (.04) ***
Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
Family traditionalism 3	.66 (.05) ***	.74 (.11)***	.30 (.04) ***
Family traditionalism 4	.62 (.06) ***	.76 (.12)***	.39 (.05) ***
Family traditionalism 5	.71 (.04) ***	.93 (.12)***	.30 (.04) ***
Family traditionalism 6	.77 (.04) ***	.92 (.13)***	.25 (.04) ***
Family traditionalism 7	.69 (.05) ***	.96 (.14)***	.41 (.05) ***
Family Cohesion 1	.78 (.04) ***	1.0 (--)	.12 (.02) ***
Family Cohesion 2	.73 (.04) ***	.97 (.10)***	.15 (.02) ***
Family Cohesion 3	.75 (.04) ***	.99 (.10)***	.16 (.02) ***
Family Cohesion 4	.53 (.06) ***	.82 (.12)***	.32 (.04) ***
Family Cohesion 5	.71 (.04) ***	1.07 (.11)***	.22 (.03) ***
Parent involvement 1	.63 (.05) ***	.77 (.12)***	.06 (.01) ***
Parent involvement 2	.45 (.07) ***	.80 (.16)***	.19 (.02) ***
Parent involvement 3	.67 (.06) ***	.84 (.15)***	.06 (.01) ***
Parent involvement 4	.55 (.07) ***	.99 (16)***	.18 (.02) ***
Parent involvement 6	.64 (.06) ***	1.0 (--)	.14 (.02) ***
Parent Involvement 7	.67 (.06)***	.79 (.13)***	.06 (.01)***
Family Traditionalism WITH Family Cohesion	.51 (.07)***	.14 (.03)***	
Covariates			
Time spent in the U.S.	-.001 (.07)	-.001 (.08)	
Age	.10 (.07)	.06 (.12)	
Mom birthplace	-.03 (.09)	-.03 (.11)	
Dad birthplace	-.10 (.09)	-.11 (.10)	
Parent Condition	.05 (.08)	.02 (.03)	
Youth Condition	.04 (.07)	.17 (.14)	

*p < .05; **p < .01; ***p < .001

Table 11.

Direct and Indirect Effects: Past 30-day Alcohol Use Frequency

Model fit: $\chi^2(251) = 288.64$, p > .05: CFI = .97; RMSEA = .027 (.00 – 04); SRMR = .056

N = 200)

	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.02 (.05)	.02 (.05)
Family Cohesion ON Parent Involvement	.20 (.10)	.14 (.07)*
Parent Involvement ON Past 30-day Alcohol Use Frequency	-.06 (.08)	-.30 (.41)
Family Traditionalism on Past 30-day Alcohol Use Frequency	.11 (.09)	.23 (.20)
Family Cohesion on Past 30-day Alcohol Use Frequency	-.07 (.09)	-.19 (.31)
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Past 30-day Alcohol Use Frequency THROUGH Parent Involvement	-.003 (.01)	-.01 (.02)
Family Cohesion ON Past 30-day Alcohol Use Frequency THROUGH Parent Involvement	-.01 (.02)	-.04 (.06)
Residual for Past 30-day Alcohol Use Frequency	.97 (.03)***	1.63 (.17)***

*p < .05; **p < .01; ***p < .001

Table 12.
Measurement Model: Lifetime Alcohol Use

	Standardized β (SE)	Unstandardized b (SE)	Error Variances
Measurement Model Estimates			
Family traditionalism 1	.70 (.05)***	.88 (.13)***	.36 (.04) ***
Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
Family traditionalism 3	.66 (.05) ***	.74 (.11)***	.30 (.04) ***
Family traditionalism 4	.62 (.06) ***	.76 (.12)***	.39 (.05) ***
Family traditionalism 5	.71 (.04) ***	.93 (.12)***	.30 (.04) ***
Family traditionalism 6	.77 (.04) ***	.92 (.13)***	.25 (.04) ***
Family traditionalism 7	.69 (.05) ***	.96 (.14)***	.41 (.05) ***
Family Cohesion 1	.78 (.04) ***	1.0 (--)	.12 (.02) ***
Family Cohesion 2	.73 (.04) ***	.97 (.10)***	.15 (.02) ***
Family Cohesion 3	.75 (.04) ***	.99 (.10)***	.16 (.02) ***
Family Cohesion 4	.53 (.06) ***	.82 (.12)***	.32 (.04) ***
Family Cohesion 5	.71 (.04) ***	1.07 (.11)***	.22 (.03) ***
Parent involvement 1	.63 (.05) ***	.77 (.12)***	.06 (.01) ***
Parent involvement 2	.45 (.07) ***	.80 (.16)***	.19 (.02) ***
Parent involvement 3	.67 (.06) ***	.84 (.15)***	.06 (.01) ***
Parent involvement 4	.55 (.07) ***	.99 (16)***	.18 (.02) ***
Parent involvement 6	.64 (.06) ***	1.0 (--)	.14 (.02) ***
Parent Involvement 7	.67 (.06)***	.79 (.13)***	.06 (.01)***
Family Traditionalism WITH Family Cohesion	.51 (.07)***	.14 (.03)***	
Covariates			
Time spent in the U.S.	.04 (.07)	.07 (.13)	
Age	.06 (.07)	.27 (.33)	
Mom birthplace	.03 (.09)	-.03 (.11)	
Dad birthplace	-.11 (.09)	-.11 (.10)	
Parent Condition	.05 (.08)	.02 (.03)	
Youth Condition	.05 (.07)	.13 (.03)	

*p < .05; **p < .01; ***p < .001

Table 13.
Measurement Model: Past 30-day Cigarette Use Amount

		Standardized *β (SE)*	Unstandardized b (SE)	Error Variances
Measurement Model Estimates				
	Family traditionalism 1	.70 (.05)***	.88 (.13)***	.36 (.04) ***
	Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
	Family traditionalism 3	.66 (.05) ***	.74 (.11)***	.30 (.04) ***
	Family traditionalism 4	.62 (.06) ***	.76 (.12)***	.39 (.05) ***
	Family traditionalism 5	.71 (.04) ***	.93 (.12)***	.30 (.04) ***
	Family traditionalism 6	.77 (.04) ***	.92 (.13)***	.25 (.04) ***
	Family traditionalism 7	.69 (.05) ***	.96 (.14)***	.41 (.05) ***
	Family Cohesion 1	.78 (.04) ***	1.0 (--)	.12 (.02) ***
	Family Cohesion 2	.73 (.04) ***	.97 (.10)***	.15 (.02) ***
	Family Cohesion 3	.75 (.04) ***	.99 (.10)***	.16 (.02) ***
	Family Cohesion 4	.53 (.06) ***	.82 (.12)***	.32 (.04) ***
	Family Cohesion 5	.71 (.04) ***	1.07 (.11)***	.22 (.03) ***
	Parent involvement 1	.63 (.05) ***	.77 (.12)***	.06 (.01) ***
	Parent involvement 2	.45 (.07) ***	.80 (.16)***	.19 (.02) ***
	Parent involvement 3	.67 (.06) ***	.84 (.15)***	.06 (.01) ***
	Parent involvement 4	.55 (.07) ***	.99 (16)***	.18 (.02) ***
	Parent involvement 6	.64 (.06) ***	1.0 (--)	.14 (.02) ***
	Parent Involvement 7	.67 (.06)***	.79 (.13)***	.06 (.01)***
	Family Traditionalism WITH Family Cohesion	.51 (.07)***	.14 (.03)***	
Covariates				
	Time spent in the U.S.	-.04 (.07)	-.02 (.03)	
	Age	.04 (.07)	.04 (.07)	
	Mom birthplace	.03 (.09)	-.03 (.11)	
	Dad birthplace	-.11 (.09)	-.11 (.10)	
	Parent Condition	.05 (.08)	.02 (.03)	
	Youth Condition	.07 (.07)	.04 (.03)	

*p < .05; **p < .01; ***p < .001

Table 14.
Direct and Indirect Effects: Past 30-day Cigarette Use Amount
Model fit: $\chi^2(251) = 280.40$, $p > .05$: CFI = .97; RMSEA = .024 (.00 – 04); SRMR = .055
N = 200

Parameter Estimate	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.05 (.10)	.02 (.05)
Family Cohesion ON Parent Involvement	.22 (.10)*	.14 (.07)*
Parent Involvement ON Past 30-day Cigarette Use Amount	-.03 (.00)	-.04 (.14)
Family Traditionalism on Past 30-day Cigarette Use Amount	.13 (.09)	.09 (.07)
Family Cohesion on Past 30-day Cigarette Use Amount	-.13 (.09)	-.14 (.11)
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Past 30-day Cigarette Use Amount THROUGH Parent Involvement	-.001 (.004)	-.01 (.02)
Family Cohesion ON Past 30-day Cigarette Use Amount THROUGH Parent Involvement	-.01 (.02)	-.03 (.09)
Residual for Past 30-day Cigarette Use Amount	.97 (.03)***	.21 (.02)***

*p < .05; **p < .01; ***p < .001

Table 15.
Measurement Model: Past 30-day Cigarette Use Frequency

		Standardized β (SE)	Unstandardized b (SE)	Error Variances
Measurement Model Estimates				
	Family traditionalism 1	.70 (.05)***	.88 (.13)***	.36 (.04) ***
	Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
	Family traditionalism 3	.66 (.05) ***	.74 (.11)***	.30 (.04) ***
	Family traditionalism 4	.62 (.06) ***	.76 (.12)***	.39 (.05) ***
	Family traditionalism 5	.71 (.04) ***	.93 (.12)***	.30 (.04) ***
	Family traditionalism 6	.77 (.04) ***	.92 (.13)***	.25 (.04) ***
	Family traditionalism 7	.69 (.05) ***	.96 (.14)***	.41 (.05) ***
	Family Cohesion 1	.78 (.04) ***	1.0 (--)	.12 (.02) ***
	Family Cohesion 2	.73 (.04) ***	.97 (.10)***	.15 (.02) ***
	Family Cohesion 3	.75 (.04) ***	.99 (.10)***	.16 (.02) ***
	Family Cohesion 4	.53 (.06) ***	.82 (.12)***	.32 (.04) ***
	Family Cohesion 5	.71 (.04) ***	1.07 (.11)***	.22 (.03) ***
	Parent involvement 1	.63 (.05) ***	.77 (.12)***	.06 (.01) ***
	Parent involvement 2	.45 (.07) ***	.80 (.16)***	.19 (.02) ***
	Parent involvement 3	.67 (.06) ***	.84 (.15)***	.06 (.01) ***
	Parent involvement 4	.55 (.07) ***	.99 (16)***	.18 (.02) ***
	Parent involvement 6	.64 (.06) ***	1.0 (--)	.14 (.02) ***
	Parent Involvement 7	.67 (.06)***	.79 (.13)***	.06 (.01)***
	Family Traditionalism WITH Family Cohesion	.51 (.07)***	.14 (.03)***	
Covariates				
	Time spent in the U.S.	-.04 (.07)	.01 (.03)	
	Age	.04 (.07)	.05 (.07)	
	Mom birthplace	.03 (.09)	-.04 (.11)	
	Dad birthplace	-.11 (.09)	-.12 (.10)	
	Parent Condition	.05 (.08)	.02 (.03)	
	Youth Condition	.07 (.07)	.01 (.04)	

*p < .05; **p < .01; ***p < .001

Table 16.
Direct and Indirect Effects: Past 30-day Cigarette Use Frequency

Model fit: $\chi^2(251) = 283.17$, p > .05: CFI = .97; RMSEA = .025 (.00 – 04); SRMR = .056
N = 200

	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.05 (.10)	.02 (.05)
Family Cohesion ON Parent Involvement	.22 (.10)*	.14 (.07)*
Parent Involvement ON Past 30-day Cigarette Use Frequency	-.08 (.08)	-.14 (.14)
Family Traditionalism on Past 30-day Cigarette Use Frequency	.09 (.09)	.07 (.07)
Family Cohesion on Past 30-day Cigarette Use Frequency	-.02 (.09)	-.02 (.11)
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Past 30-day Cigarette Use Frequency THROUGH Parent Involvement	-.004 (.01)	-.003 (.02)
Family Cohesion ON Past 30-day Cigarette Use Frequency THROUGH Parent Involvement	-.02 (.02)	-.02 (.09)
Residual for Past 30-day Cigarette Use Frequency	.97 (.03)***	.19 (.02)***

*p < .05; **p < .01; ***p < .001

Table 17.
Measurement Model: Lifetime Cigarette Use

		Standardized β (SE)	Unstandardized b (SE)	Error Variances
Measurement Model Estimates				
	Family traditionalism 1	.70 (.05)***	.88 (.13)***	.36 (.04) ***
	Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
	Family traditionalism 3	.66 (.05) ***	.74 (.11)***	.30 (.04) ***
	Family traditionalism 4	.62 (.06) ***	.76 (.12)***	.39 (.05) ***
	Family traditionalism 5	.71 (.04) ***	.93 (.12)***	.30 (.04) ***
	Family traditionalism 6	.77 (.04) ***	.92 (.13)***	.25 (.04) ***
	Family traditionalism 7	.69 (.05) ***	.96 (.14)***	.41 (.05) ***
	Family Cohesion 1	.78 (.04) ***	1.0 (--)	.12 (.02) ***
	Family Cohesion 2	.73 (.04) ***	.97 (.10)***	.15 (.02) ***
	Family Cohesion 3	.75 (.04) ***	.99 (.10)***	.16 (.02) ***
	Family Cohesion 4	.53 (.06) ***	.82 (.12)***	.32 (.04) ***
	Family Cohesion 5	.71 (.04) ***	1.07 (.11)***	.22 (.03) ***
	Parent involvement 1	.63 (.05) ***	.77 (.12)***	.06 (.01) ***
	Parent involvement 2	.45 (.07) ***	.80 (.16)***	.19 (.02) ***
	Parent involvement 3	.67 (.06) ***	.84 (.15)***	.06 (.01) ***
	Parent involvement 4	.55 (.07) ***	.99 (16)***	.18 (.02) ***
	Parent involvement 6	.64 (.06) ***	1.0 (--)	.14 (.02) ***
	Parent Involvement 7	.67 (.06)***	.79 (.13)***	.06 (.01)***
	Family Traditionalism WITH Family Cohesion	.51 (.07)***	.14 (.03)***	
Covariates				
	Time spent in the U.S.	.04 (.07)	.02 (.03)	
	Age	-.001 (.07)	-.001 (.07)	
	Mom birthplace	.03 (.09)	-.04 (.11)	
	Dad birthplace	-.11 (.09)	-.12 (.10)	
	Parent Condition	.05 (.08)	.02 (.03)	
	Youth Condition	.07 (.07)	.01 (.04)	

*p < .05; **p < .01; ***p < .001

Table 18.
Measurement Model: Past 30-day Marijuana Use Amount

	Standardized *β (SE)*	Unstandardized b (SE)	Error Variances
Measurement Model Estimates			
Family traditionalism 1	.68 (.05)***	.86 (.13)***	.36 (.04) ***
Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
Family traditionalism 3	.66 (.05) ***	.74 (.11)***	.30 (.04) ***
Family traditionalism 4	.61 (.06) ***	.75 (.12)***	.39 (.05) ***
Family traditionalism 5	.75 (.04) ***	.94 (.13)***	.30 (.04) ***
Family traditionalism 6	.77 (.04) ***	.93 (.13)***	.25 (.04) ***
Family traditionalism 7	.70 (.05) ***	.97 (.14)***	.41 (.05) ***
Family Cohesion 1	.78 (.04) ***	1.0 (--)	.12 (.02) ***
Family Cohesion 2	.74 (.04) ***	1.0 (.11)***	.15 (.02) ***
Family Cohesion 3	.74 (.04) ***	.99 (.11)***	.15 (.02) ***
Family Cohesion 4	.52 (.06) ***	.80 (.13)***	.32 (.04) ***
Family Cohesion 5	.69 (.05) ***	1.04 (.12)***	.22 (.03) ***
Parent involvement 1	.66 (.05) ***	.82 (.13)***	.06 (.01) ***
Parent involvement 2	.43 (.07) ***	.79 (.17)***	.19 (.02) ***
Parent involvement 3	.67 (.06) ***	.85 (.15)***	.06 (.01) ***
Parent involvement 4	.53 (.07) ***	.99 (17)***	.18 (.02) ***
Parent involvement 6	.59 (.06) ***	1.0 (--)	.14 (.02) ***
Covariates			
Time spent in the U.S.	.03 (.07)	.02 (.06)	
Gender	-.16 (.07)*	-.28 (.13)*	
Age	.11 (.07)	.22 (.15)	
Mom birthplace	-.07 (.10)	-.08 (.12)	
Dad birthplace	-.04 (.10)	-.05 (.11)	
Parent Condition	.06 (.08)	.02 (.03)	
Youth Condition	.17 (.07)*	.19 (.08)*	

*p < .05; **p < .01; ***p < .001

Table 19.
Direct and Indirect Effects: Past 30-day Marijuana Use Amount

Model fit: $\chi^2(270) = 417.71$, $p < .001$: CFI = .87; RMSEA = .04; SRMR = .09
N = 194

	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.05 (.09)	.02 (.04)
Family Cohesion ON Parent Involvement	.20 (.09)*	.13 (.06)*
Parent Involvement ON Past 30-day Marijuana Use Amount	-.08 (.08)	-.13 (.14)
Family Traditionalism on Past 30-day Marijuana Use Amount	.03 (.10)	.07 (.06)
Family Cohesion on Past 30-day Marijuana Use Amount	-.05 (.10)	-.16 (.07)
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Past 30-day Marijuana Use Amount THROUGH Parent Involvement	-.003 (.01)	-.003 (.01)
Family Cohesion ON Past 30-day Marijuana Use Amount THROUGH Parent Involvement	-.01 (.02)	-.02 (.02)
Residual for Past 30-day Marijuana Use Amount	.92 (.04)***	.73 (.08)***

*p < .05; **p < .01; ***p < .001

Table 20.
Measurement Model: Past 30-day Marijuana Use Frequency

Parameter Estimate	Standardized *β (SE)*	Unstandardized b (SE)	Error Variances
Measurement Model Estimates			
Family traditionalism 1	.68 (.05)***	.86 (.13)***	.36 (.04) ***
Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
Family traditionalism 3	.66 (.05) ***	.74 (.11)***	.30 (.04) ***
Family traditionalism 4	.61 (.06) ***	.75 (.12)***	.39 (.05) ***
Family traditionalism 5	.75 (.04) ***	.94 (.13)***	.30 (.04) ***
Family traditionalism 6	.77 (.04) ***	.93 (.13)***	.25 (.04) ***
Family traditionalism 7	.70 (.05) ***	.97 (.14)***	.41 (.05) ***
Family Cohesion 1	.78 (.04) ***	1.0 (--)	.12 (.02) ***
Family Cohesion 2	.74 (.04) ***	.99 (.11)***	.15 (.02) ***
Family Cohesion 3	.74 (.04) ***	.98 (.11)***	.15 (.02) ***
Family Cohesion 4	.52 (.06) ***	.80 (.13)***	.32 (.04) ***
Family Cohesion 5	.69 (.05) ***	1.04 (.12)***	.22 (.03) ***
Parent involvement 1	.66 (.05) ***	.82 (.13)***	.06 (.01) ***
Parent involvement 2	.43 (.07) ***	.79 (.17)***	.19 (.02) ***
Parent involvement 3	.67 (.06) ***	.85 (.15)***	.06 (.01) ***
Parent involvement 4	.53 (.07) ***	.98 (17)***	.18 (.02) ***
Parent involvement 6	.59 (.06) ***	1.0 (--)	.14 (.02) ***
Covariates			
Time spent in the U.S.	-.06 (.07)	.05 (.06)	
Gender	-.22 (.07)**	-.39 (.13)**	
Age	.09 (.07)	.18 (.15)	
Mom birthplace	-.07 (.10)	-.08 (.12)	
Dad birthplace	-.04 (.10)	-.05 (.11)	
Parent Condition	.06 (.08)	.02 (.03)	
Youth Condition	.18 (.07)*	.20 (.08)*	

*p < .05; **p < .01; ***p < .001

Table 21.

Direct and Indirect Effects: Past 30-day Marijuana Use Frequency

Model fit: $\chi^2(270) = 422.14$, $p < .001$: CFI = .87; RMSEA = .048; SRMR = .09

N = 194

	Standardized *β (SE)*	Unstandardized b (SE)
Structural Model Estimates: Direct Effects		
Family Traditionalism ON Parent Involvement	.05 (.09)	.02 (.04)
Family Cohesion ON Parent Involvement	.20 (.09)*	.13 (.06)*
Parent Involvement ON Past 30-day Marijuana Use Frequency	-.06 (.08)	-.19 (.27)
Family Traditionalism on Past 30-day Marijuana Use Frequency	.05 (.09)	.07 (.12)
Family Cohesion on Past 30-day Marijuana Use Frequency	-.13 (.09)	-.26 (.19)
Structural Model Estimates: Indirect Effects		
Family Traditionalism ON Past 30-day Marijuana Use Frequency THROUGH Parent Involvement	-.003 (.01)	-.004 (.01)
Family Cohesion ON Past 30-day Marijuana Use Frequency THROUGH Parent Involvement	-.01 (.02)	-.02 (.02)
Residual for Past 30-day Marijuana Use Frequency	.89 (.05)***	.71 (.07)***

*p < .05; **p < .01; ***p < .001

Table 22.
Measurement Model: Lifetime Marijuana Use

Parameter Estimate	Standardized *β (SE)*	Unstandardized b (SE)	Error Variances
Measurement Model Estimates			
Family traditionalism 1	.69 (.05)***	.91 (.13)***	.36 (.04) ***
Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.09) ***
Family traditionalism 3	.70 (.05) ***	.78 (.11)***	.30 (.04) ***
Family traditionalism 4	.63 (.05) ***	.78 (.12)***	.39 (.05) ***
Family traditionalism 5	.76 (.04) ***	1.01 (.13)***	.30 (.04) ***
Family traditionalism 6	.76 (.04) ***	.95 (.13)***	.25 (.04) ***
Family traditionalism 7	.70 (.05) ***	1.0 (.14)***	.41 (.05) ***
Family Cohesion 1	.79 (.04) ***	1.0 (--)	.12 (.02) ***
Family Cohesion 2	.78 (.04) ***	1.01 (.09)***	.15 (.02) ***
Family Cohesion 3	.78 (.04) ***	.96 (.09)***	.15 (.02) ***
Family Cohesion 4	.61 (.06) ***	.85 (.11)***	.32 (.04) ***
Family Cohesion 5	.69 (.05) ***	.97 (.10)***	.22 (.03) ***
Parent involvement 1	.64 (.05) ***	.75 (.12)***	.06 (.01) ***
Parent involvement 2	.45 (.07) ***	.77 (.15)***	.19 (.02) ***
Parent involvement 3	.69 (.07) ***	.83 (.16)***	.06 (.01) ***
Parent involvement 4	.55 (.07) ***	.95 (16)***	.18 (.02) ***
Parent involvement 6	.63 (.06) ***	1.0 (--)	.14 (.02) ***
Covariates			
Time spent in the U.S.	.02 (.07)	.03 (.09)	
Gender	-182 (.07)**	-.50 (.19)**	
Age	.06 (.07)	.19 (.23)	
Mom birthplace	-.04 (.10)	-.05 (.11)	
Dad birthplace	-.03 (.11)	-.04 (.11)	
Parent Condition	.08 (.09)	.03 (.03)	
Youth Condition	.17 (.07)*	.27 (.12)*	

*p < .05; **p < .01; ***p < .001

Table 23.

Correlation Matrix for the Three Latent Factors

Item	Fam Coh1	Fam Coh2	Fam Coh3	Fam Coh4	Fam Coh5	Fam Trd2	Fam Trd1	Fam Trd3	Fam Trd4	Fam Trd5	Fam Trd6	Fam Trd7	Par Inv6	Par Inv2	Par Inv3	Par Inv4	Par Inv1	Par Inv7
Fam Coh1	1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fam Coh2	.58	1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fam Coh3	.54	.56	1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fam Coh4	.36	.36	.36	1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fam Coh5	.59	.52	.50	.37	1.0	--	--	--	--	--	--	--	--	--	--	--	--	--
Fam Trd2	.17	.24	.22	.14	.30	1.0	--	--	--	--	--	--	--	--	--	--	--	--
Fam Trd1	.24	.26	.25	.18	.30	.39	1.0	--	--	--	--	--	--	--	--	--	--	--
Fam Trd3	.23	.21	.34	.17	.29	.46	.34	1.0	--	--	--	--	--	--	--	--	--	--
Fam Trd4	.21	.23	.25	.13	.18	.33	.40	.34	1.0	--	--	--	--	--	--	--	--	--
Fam Trd5	.20	.22	.17	.06	.18	.39	.47	.44	.56	1.0	--	--	--	--	--	--	--	--
Fam Trd6	.21	.30	.27	.13	.27	.36	.46	.44	.41	.45	1.0	--	--	--	--	--	--	--
Fam Trd7	.15	.17	.25	.13	.27	.40	.39	.39	.42	.43	.50	1.0	--	--	--	--	--	--
Par Inv6	.23	.16	.11	.14	.12	.09	.11	.12	.08	.19	.07	.17	1.0	--	--	--	--	--
Par Inv2	.15	.19	.07	.10	.16	.14	.27	.06	.10	.13	.24	.11	.22	1.0	--	--	--	--
Par Inv3	.11	.14	.05	.06	.12	.14	.09	.06	.02	.08	.07	.06	.32	.32	1.0	--	--	--
Par Inv4	.13	.13	.05	.12	.17	.19	.16	.10	.09	.11	.08	.12	.44	.43	.39	1.0	--	--
Par Inv1	.13	.17	.11	.05	.07	.04	.01	.04	.02	.06	-.04	.13	.35	.16	.48	.31	1.0	--
Par Inv7	.14	.08	.05	.08	.05	.09	.07	.02	.00	.08	.06	.15	.34	.29	.43	.36	.37	1.0

Table 24.
Second Order CFA: Family Traditionalism and Family Cohesion
Model fit: $\chi^2(51) = 178.00$, p < .01: CFI = .97; RMSEA = .036 (.02 - .05); SRMR = .06
N = 289

	Standardized *β (SE)*	Unstandardized b (SE)	Residual Variances
Measurement Model Estimates			
Family traditionalism 1	.68 (.05)***	.85 (.11)***	.44 (.04) ***
Family traditionalism 2	.60 (06) ***	1.0 (--)	.75 (.07) ***
Family traditionalism 3	.65 (.05) ***	.65 (.08)***	.28 (.03) ***
Family traditionalism 4	.61 (.06) ***	.73 (.10)***	.43 (.04) ***
Family traditionalism 5	.75 (.04) ***	.85 (.11)***	.39 (.04) ***
Family traditionalism 6	.77 (.04) ***	.78 (.09)***	.27 (.03) ***
Family traditionalism 7	.70 (.05) ***	.82 (.10)***	.39 (.04) ***
Family Cohesion 1	.77 (.03) ***	1.0 (--)	.14 (.02) ***
Family Cohesion 2	.75 (.03) ***	.99 (.08)***	.15 (.02) ***
Family Cohesion 3	.72 (.04) ***	.92 (.08)***	.16 (.02) ***
Family Cohesion 4	.49 (.05) ***	.75 (.10)***	.36 (.03) ***
Family Cohesion 5	.73 (.04)***	1.07 (.9)***	.20 (.02) ***
Higher Order Factor			
Family Traditionalism on Higher Order Factor	.22 (.03)***	.14 (03)***	
Family Cohesion on Higher Order Factor	.2.24 (.16)***	1.0 (--)	

*p < .05; **p < .01; ***p < .001

Table 25.
Reliability Alpha Coefficients for Latent Factors

	Family Traditionalism (7-items)	Family Cohesion (5-items)	Parent Involvement (6-items)	Acculturation (3-items)
Cronbach's Alpha Coefficient	.82 (*N* = 428)	.82 (*N* = 434)	.72 (*N* = 397)	.76 (*N* = 620)

Table 26.
Pearson Correlations Between Latent Factors

	Family Cohesion	Family Traditionalism	Parent Involvement
Family Cohesion	--	--	--
Family Traditionalism	.29*** (*N* = 420)	--	--
Parent Involvement	.26*** (*N* = 376)	.19*** (*N* = 369)	--

*p < .05; **p < .01; ***p < .001

Table 27.
Model Fit for Single CFA Measurement Models

Sample	Single Factor Models	χ^2/df (hypothesized model)	χ^2_{diff} (baseline model)	CFI	TFI	RMSEA (90% CI)	SRMR
N = 280	Family Cohesion	15.19 (9)	569.47 (15)***	.99	.98	.05 (.00 - .09)	.03
N = 280	Family Traditionalism	42.43 (20)*	735.06 (28)***	.97	.96	.06 (.04 - .09)	.03
N = 259	Parental Involvement	38.97 (14)**	355.94 (21)***	.93	.89	.08 (.05 - .11)	.04

Table 28.
Revised Model Fit for Single CFA Measurement Models

Sample	Single Factor Models	χ^2/df (hypothesized model)	χ^2_{diff} (baseline model)	CFI	RMSEA (90% CI)
N = 280	Family Cohesion	3.88 (5)	458.24 (10)***	.99	.00 (.00 - .07)
N = 280	Family Traditionalism	18.91 (12)	561.73 (21)***	.99	.04 (.00 - .08)
N = 259	Parental Involvement	20.29 (7)*	332.48 (15)***	.96	.08 (.04 - .13)
	Two Factor Model				
N = 289	Family Cohesion + Family Traditionalism	70.04 (51)	1116.96 (66)***	.98	.04 (.01 - .06)
	Three Factor Model				
N = 289	Family Cohesion + Family Traditionalism + Parent Involvement	171.59 (128)*	1544.09 (153)***	.97	.03 (.02 - .05)
	Second Order CFA				
N = 289	Family Cohesion and Family Traditionalism ON Higher Order Factor	70.04 (51)*	1116.97 (66)***	.98	.037 (.01 - .06)
N = 289	Family Traditionalism, Family Cohesion, and Parent Involvement ON Higher Order Factor	178.00 (129)*	1544.09 (153)***	.97	.04 (.02 - .05)

*p < .05; **p < .01; ***p < .001

Table 29.
Factor Loadings for Single CFA Models

Item	Family Cohesion (N = 280) *β (SE)*	b (SE)	Family Traditionalism (*N* = 280) *β (SE)*	b (SE)	Parental Involvement (*N* = 259) *β (SE)*	b (SE)
Family Cohesion						
1. Family members feel close to each other	.75 (.03) ***	1.0 (--)				
2. easily think of things to do as family	.75 (.03) ***	.99 (.08)***				
3. Family members ask each other for help	.72 (.04) ***	.93 (.08) ***				
4. I listen what family members say	.51 (.05) ***	.79 (.10) ***				
5. Fam members like spend free time w each other	.73 (.04) ***	1.07 (.09) ***				
6.Avlble when others in family need me	.60 (.04) ***	.77 (.08) ***				
Family Traditionalism						
1.Family history			.61 (.05) ***	.83 (.11) ***		
2.Staying at home taking care of family			.59 (.05) ***	1.0 (--)		
3.Loyal to family			.63 (.04) ***	.66 (.08) ***		
4.Celebrations add meaning			.64 (.04) ***	.81 (.10) ***		
5.Preserve customs			.71 (.04) ***	.92 (.11) ***		
6.Visit parents as an expression			.70 (.04) ***	.79 (.09) ***		
7.Good life spent w family			.68 (.04) ***	.86 (.10) ***		
8.Remain close to family			.73 (.03) ***	.86 (.09) ***		
Parent Involvement						
1.Know what they're doing when home					.59 (.05) ***	.73 (.11) ***
2.Like get involved in family activities					.42 (.06) ***	.93 (.16) ***
3.Lstn to child when want to talk					.68 (.05) ***	.89 (.13) ***
4.Do things together when both home					.62 (.05) ***	1.23 (.17) ***
5.Go to movies, sports events, etc					.29 (.07) ***	.74 (.19) ***
6.Friendly chat w child					.56 (.06) ***	1.0 (--)
7.Talk about how they're doing school					.59 (.06) ***	.83 (.12) ***

*p < .05; **p < .01; ***p < .001

Table 30.
Family Cohesion Correlation Matrix

Item	1	2	3	4	5	6
1	1.0	--	--	--	--	--
2	.58	1.0	--	--	--	--
3	.54	.56	1.0	--	--	--
4	.36	.36	.36	1.0	--	--
5	.59	.52	.50	.37	1.0	--
6	.40	.44	.46	.40	.45	1.0

Table 31.
Family Traditionalism Correlation Matrix

Item	1	2	3	4	5	6	7	8
1	1.0	--	--	--	--	--	--	--
2	.39	1.0	--	--	--	--	--	--
3	.34	.46	1.0	--	--	--	--	--
4	.41	.34	.34	1.0	--	--	--	--
5	.47	.39	.45	.56	1.0	--	--	--
6	.46	.37	.44	.41	.46	1.0	--	--
7	.39	.41	.39	.42	.43	.50	1.0	--
8	.39	.43	.48	.44	.48	.53	.55	1.0

Table 32.

Parent Involvement Correlation Matrix

Item	1	2	3	4	5	6	7
1	1.0	--	--	--	--	--	--
2	.16	1.0	--	--	--	--	--
3	.48	.32	1.0	--	--	--	--
4	.31	.43	.39	1.0	--	--	--
5	.12	.23	.18	.24	1.0	--	--
6	.35	.21	.32	.44	.12	1.0	--
7	.36	.29	.43	.35	.17	.33	1.0

Table 33.
Interaction Effects: Alcohol Use Outcomes

	Model 1. Past 30-day Alcohol Use Amount (*N* = 227) Unstandardized Beta Coefficients *b (SE)*	Model 2. Past 30-day Alcohol Use Frequency (*N* = 227) Unstandardized Beta Coefficients *b (SE)*	Model 3. Lifetime Alcohol Use (*N* = 227) Unstandardized Beta Coefficients *b (SE)*
Structural Model Parameter Estimates			
Models 1-3: Family Traditionalism/Acculturation Interaction			
Family Traditionalism	.46 (.22)*	.24 (.19)	.36 (.31)
Family Traditionalism BY Acculturation	-.26 (.22)	-.28 (.19)	-.22 (.33)
Family Cohesion	-.44 (32)	-.09 (.26)	-.71 (.43)
Parent Involvement	-.24 (.62)	-.52 (.55)	-.42 (.73)
Model 4-6: Family Cohesion/Acculturation Interaction			
	Model 4. Past 30-day Alcohol Use Amount Unstandardized Beta Coefficients *b (SE)*	Model 5. Past 30-day Alcohol Use Frequency Unstandardized Beta Coefficients *b (SE)*	Model 6. Lifetime Alcohol Use Unstandardized Beta Coefficients *b (SE)*
Family Cohesion	-.29 (.32)	.03 (.29)	-.50 (.43)
Family Cohesion BY Acculturation	-.82 (.34)*	-.75 (.40)	-.82 (.48)
Family Traditionalism	.44 (.20)*	.23 (.18)	.34 (.28)
Parent Involvement	-.25 (.61	-.52 (.53)	-.45 (.71)

*p < .05; **p < .01; ***p < .001

Table 34.
Interaction Effects: Cigarette Use Outcomes

	Model 1. Past 30-day Cigarette Use Amount (*N* = 227) Unstandardized Beta Coefficients *b (SE)*	Model 2. Past 30-day Cigarette Use Frequency (*N* = 227) Unstandardized Beta Coefficients *b (SE)*	Model 3. Lifetime Cigarette Use (*N* = 227) Unstandardized Beta Coefficients *b (SE)*
Structural Model Parameter Estimates			
Models 1-3: Family Traditionalism/Acculturation Interaction			
Family Traditionalism	.08 (.07)	.07 (.06)	.06 (.07)
Family Traditionalism BY Acculturation	-.06 (.07)	-.08 (.07)	-.02 (.08)
Family Cohesion	-.11 (.09)	.01 (.09)	-.14 (.11)
Parent Involvement	-.09 (.18)	-.21 (.19)	-.16 (.18)
Model 4-6: Family Cohesion/Acculturation Interaction			
	Model 4. Past 30-day Cigarette Use Amount Unstandardized Beta Coefficients *b (SE)*	Model 5. Past 30-day Cigarette Use Frequency Unstandardized Beta Coefficients *b (SE)*	Model 6. Lifetime Cigarette Use Unstandardized Beta Coefficients *b (SE)*
Family Cohesion	-.06 (.09)	.04 (.09)	-.09 (.11)
Family Cohesion BY Acculturation	-.24 (.12)*	-.21 (.12)	-.20 (.12)
Family Traditionalism	.08 (.06)	.07 (.06)	.07 (.07)
Parent Involvement	-.10 (.18)	-.22 (.19)	-.17 (.18)

*p < .05; **p < .01; ***p < .001

Table 35.
Interaction Effects: Marijuana Use Outcomes

	Model 1. Past 30-day Marijuana Use Amount (*N* = 227) Unstandardized Beta Coefficients *b (SE)*	Model 2. Past 30-day Marijuana Use Frequency (*N* = 227) Unstandardized Beta Coefficients *b (SE)*	Model 3. Lifetime Marijuana Use(*N* = 227) Unstandardized Beta Coefficients *b (SE)*
Structural Model Parameter Estimates			
Models 1-3: Family Traditionalism/Acculturation Interaction			
Family Traditionalism	.04 (.12)*	.08 (.09)	-.05 (.17)
Family Traditionalism BY Acculturation	-.15 (.12)	-.08 (.10)	-.15 (.14)
Family Cohesion	.12 (.24)	-.08 (.24)	-.26 (.34)
Parent Involvement	-.35 (.46)	-.22 (.48)	.05 (.52)
Model 4-6: Family Cohesion/Acculturation Interaction			
	Model 4. Past 30-day Marijuana Use Amount Unstandardized Beta Coefficients *b (SE)*	Model 5. Past 30-day Marijuana Use Frequency Unstandardized Beta Coefficients *b (SE)*	Model 6. Lifetime Marijuana Use Unstandardized Beta Coefficients *b (SE)*
Family Cohesion	.14 (.28)	.04 (.30)	-.16 (.35)
Family Cohesion BY Acculturation	-.44 (.38)	-.50 (.36)	-.51 (.34)
Family Traditionalism	.06 (.12)	.08 (.09)	-.06 (.16)
Parent Involvement	-.35 (.45)	-.25 (.47)	.03 (.52)

*p < .05; **p < .01; ***p < .001

APPENDIX B

FIGURES 13- 20

Figure 13.

Family Cohesion CFA

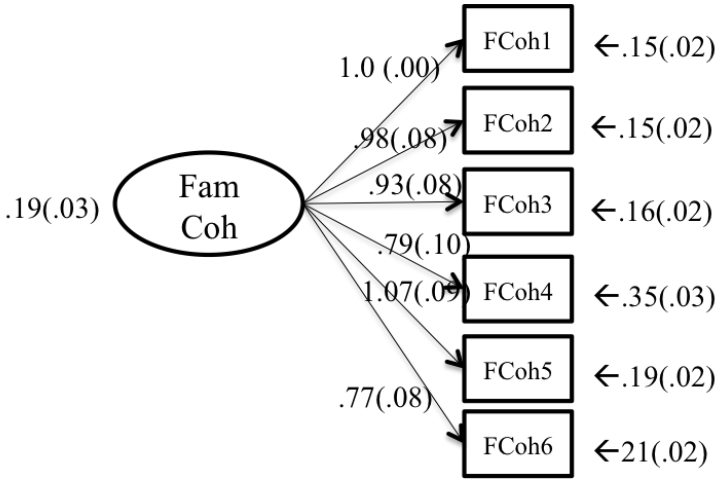

Figure 14.

Family Traditionalism CFA

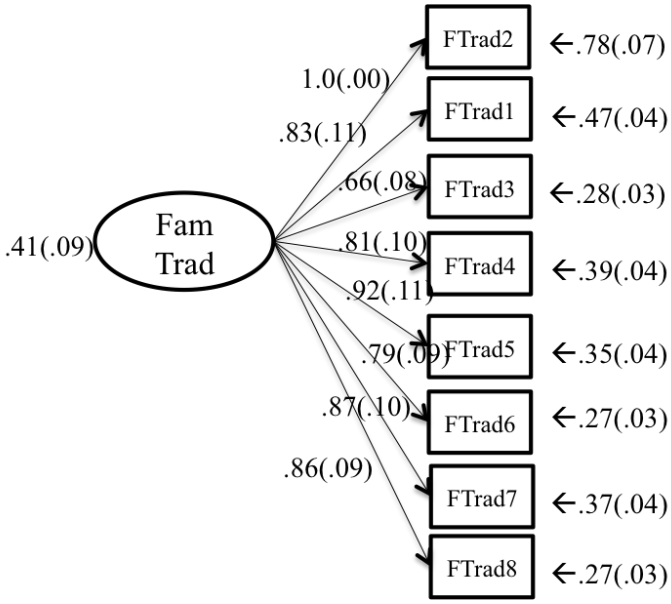

Figure 15.

Parent Involvement CFA

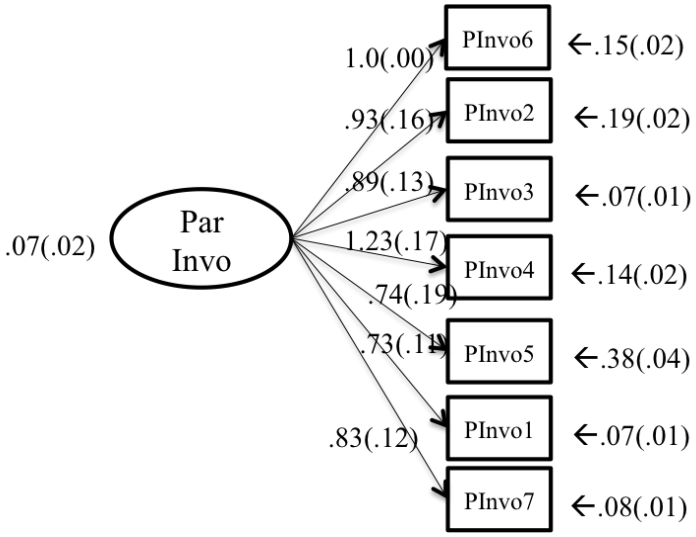

Figure 16.

Past 30-day Alcohol Use Frequency Structural Model

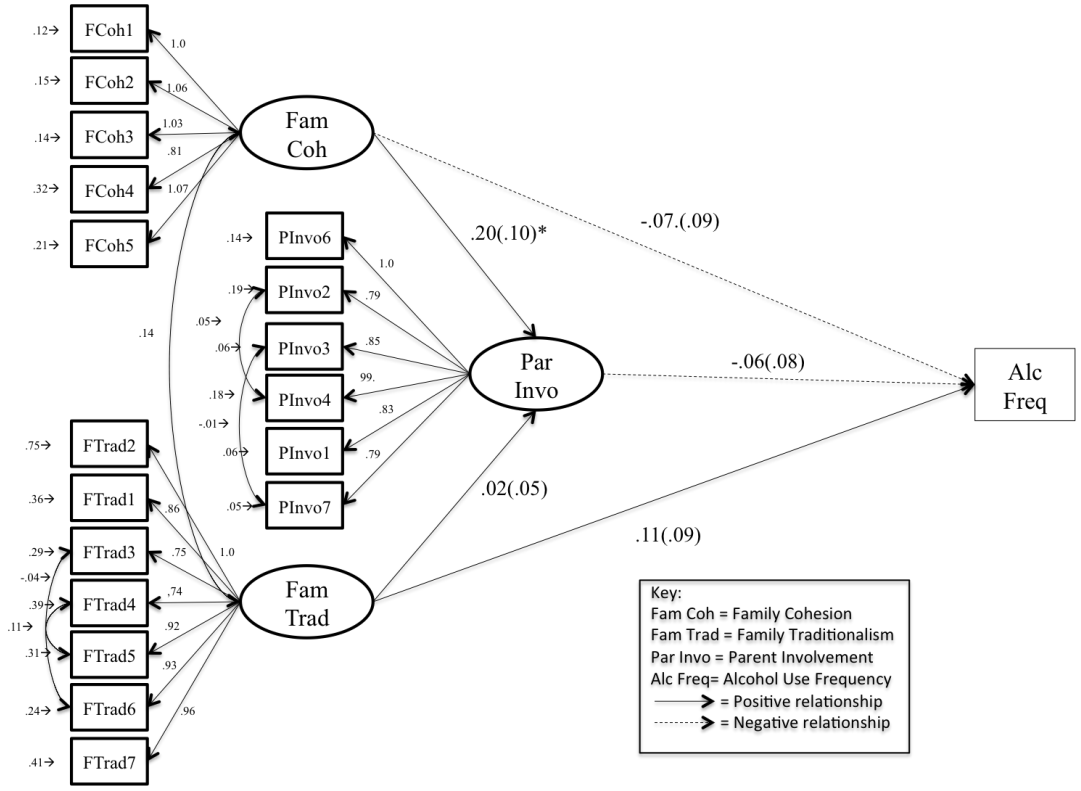

Figure 17.

Past 30-day Cigarette Use Amount Structural Model

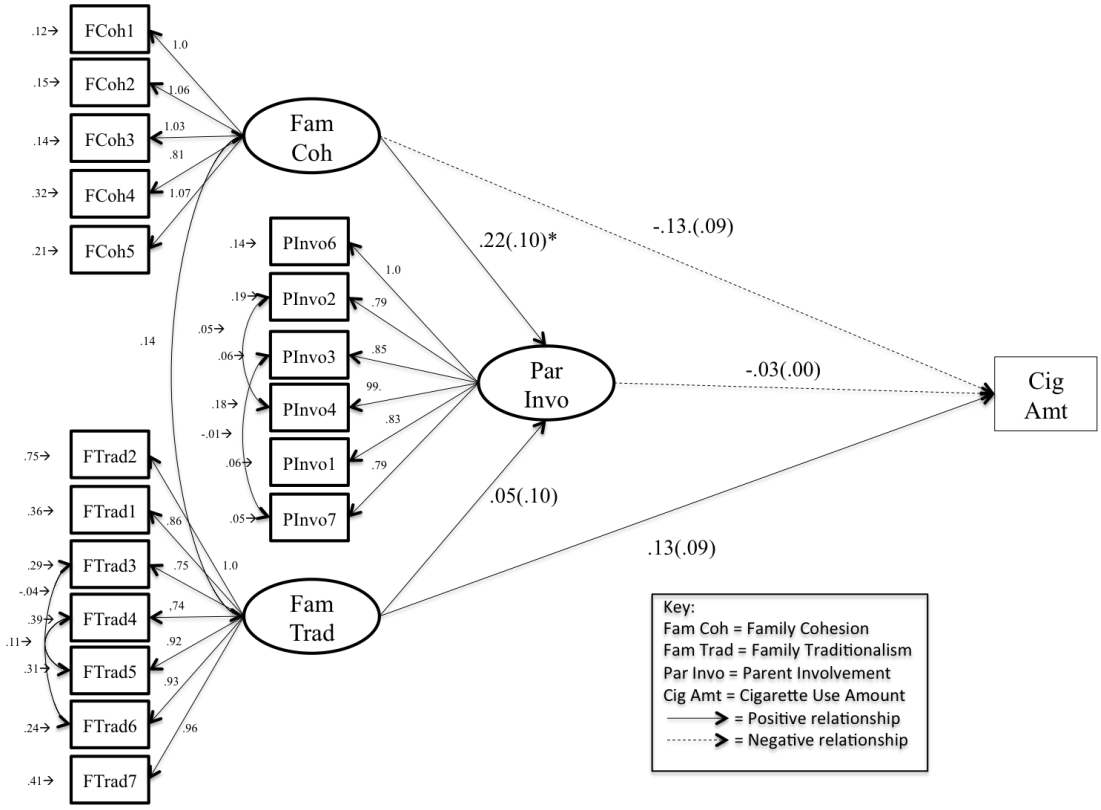

Figure 18.

Past 30-day Cigarette Use Frequency Structural Model

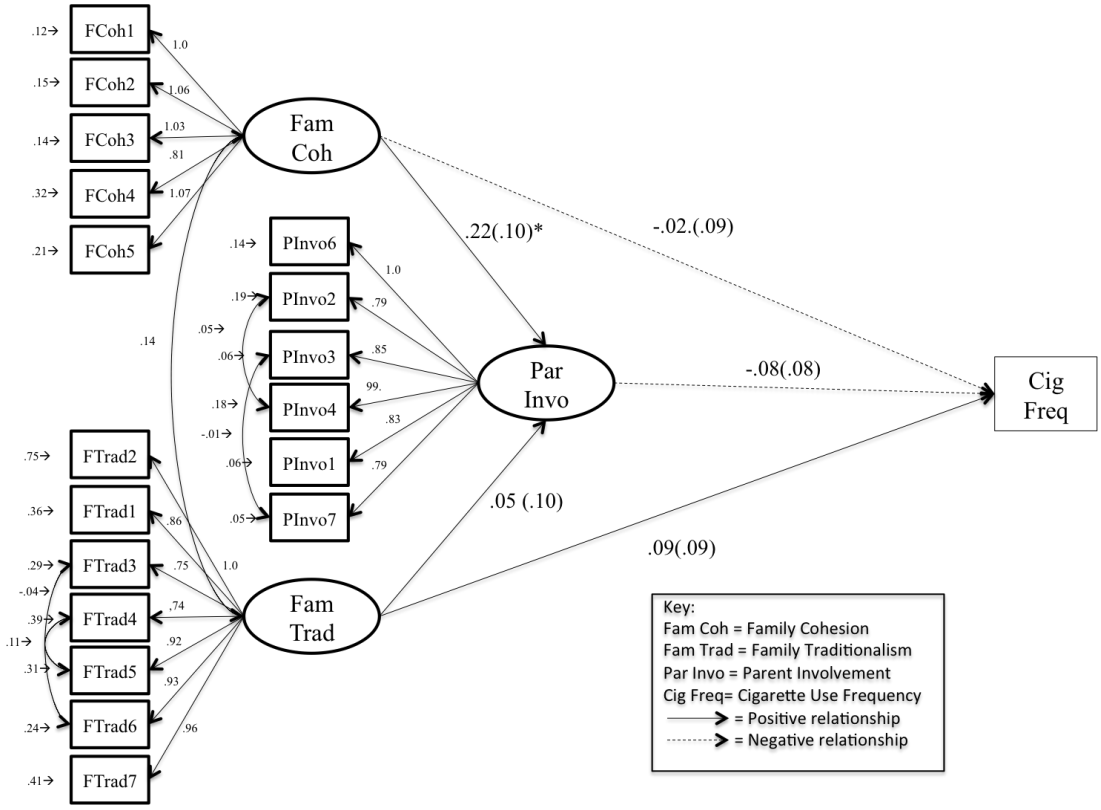

Figure 19.

Past 30-day Marijuana Use Amount Structural Model

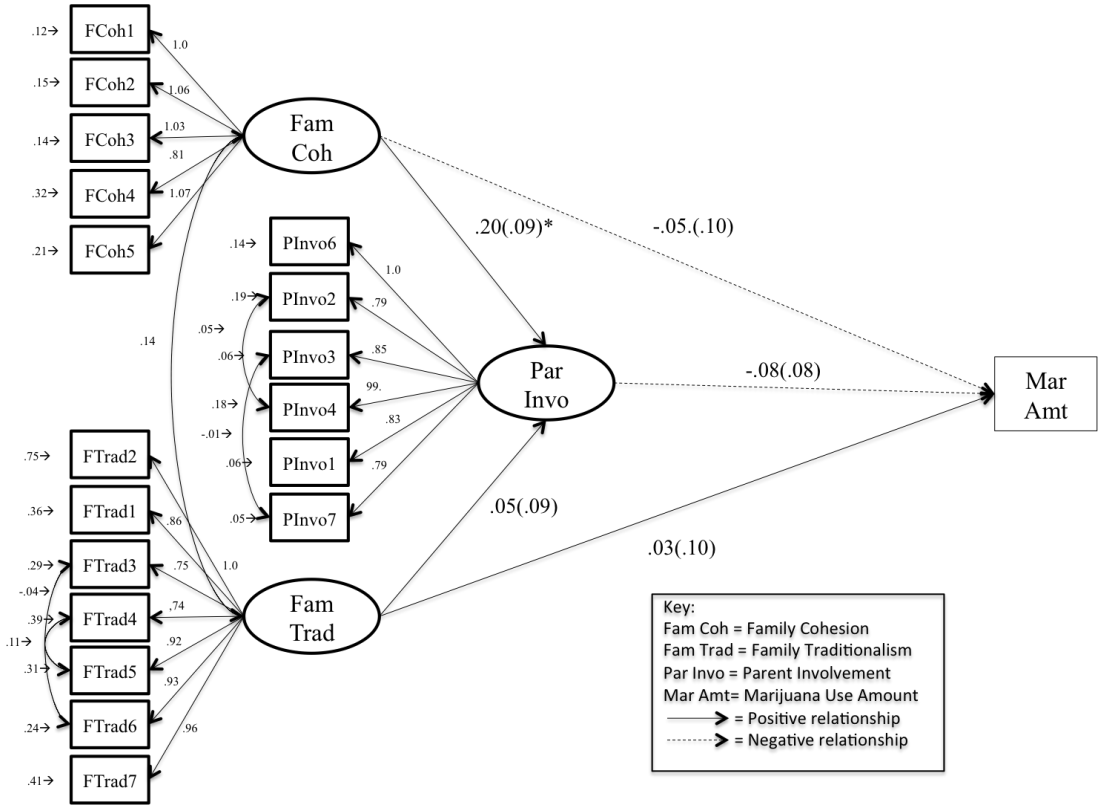

Figure 20.

Past 30-day Marijuana Use Frequency Structural Model