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The Effects of Familism and Sibling Relationships on Mexican-Origin Adolescents' Intentions for Alcohol, Tobacco, and other Drug Use

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THE EFFECTS OF FAMILISM AND SIBLING RELATIONSHIPS ON MEXICAN-ORIGIN ADOLESCENTS’ INTENTIONS FOR ALCOHOL, TOBACCO, AND OTHER DRUG USE

by

Molly Mechammil

A thesis submitted in partial fulfillment of the requirements for the degree

of

MASTER OF SCIENCE

in

Psychology

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UTAH STATE UNIVERSITY
Logan, Utah
2016
ABSTRACT

The Effects of Familism and Sibling Relationships on Mexican-Origin Adolescents’ Intentions for Alcohol, Tobacco, and other Drug Use

by

Molly Mechammil, Master of Science
Utah State University, 2016

Major Professor: Rick A. Cruz, Ph.D.
Department: Psychology

Mexican-origin youth represent a large and growing ethnic minority subgroup, and have disparate risk for early initiation of substance use. Therefore, it is crucial to understand factors that can prevent them from the initiation of substance use at an early age. Previous research has identified positive sibling relationships, lower rates of older sibling deviant behavior, and high levels of family values as important protective factors relevant for early substance use risk for European American youth. However, few studies have examined these influences among Mexican origin adolescents, and generalizability cannot be assumed given the notable differences between Mexican origin and European-American siblings. For example, Mexican origin siblings spend more time together than European-American siblings, and are shaped by many cultural factors, such as traditional family values (familism). The goal of this study was to understand the potential explanatory and interactive effects of familism and sibling relationships on Mexican
origin youths’ intentions for using substances. I hypothesized that sibling relationship quality would serve as both a partial mediator and moderator between familism and ATOD use intentions, and that higher levels of older sibling deviance would partially mediate and/or moderate the association between familism and younger sibling ATOD use intentions.

I used secondary data to analyze 409 pre-adolescent Mexican origin youth recruited from a metropolitan area in Northern California. None of our hypothesized models were confirmed. Specifically, negative sibling relationship quality did not serve as a moderator ($b = -.27, SE = .87, OR = .77, p = .77$), nor a mediator ($b = -.01, SE = .04, 95\% CI = -0.12, .05$) between familism and ATOD use intentions. Further, older sibling deviant behavior did not serve as a moderator ($b = .38, SEb = .94, OR = 1.47, p = .68$), nor a mediator ($b = -.00, SE = .04, 95\% CI = -0.10, .05$) between familism and ATOD use intentions. Despite the null findings, this study has important clinical implications, including the recommendation to promote sibling relationships in prevention programs for Latino youth. There were several limitations of the study which are discussed along with suggestions for future research directions.

(60 pages)
PUBLIC ABSTRACT

The Effects of Familism and Sibling Relationships on Mexican-Origin Adolescents’ Intentions for Alcohol, Tobacco, and other Drug Use

Molly Mechammil

The aim of this study was to investigate whether and how sibling relationships and family values intersect to influence Mexican origin youth’s intentions to use substances. Previous research with European-American families has indicated that the nature and quality of sibling relationships in particular plays a large role in whether or not youth will engage in substance use behaviors. In addition, high levels of family and cultural values have also been found to be strong protective factors for substance use in Latino youth. A better understanding of the relation between family values and sibling relationship processes is important in order to appropriately develop and tailor substance use prevention programs for Mexican origin youth, who are at an increased risk for engaging in early substance use. To address these questions, I used data from the California Families Project, a large longitudinal study based out of the University of California at Davis, funded by the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism (DA017902). The larger study examines the development of substance use among Mexican-origin youth ($N = 674$), and includes 8 waves of data collected annually from both child and parents. The current project used data from the youth at the first wave of data who had an older sibling ($n = 409$). Unfortunately, the results of this study were not as expected, and suggest that family
values and sibling relationships do not play a large role in pre-adolescent Mexican-origin individuals’ intentions for using ATOD. Despite the null findings, this study was able to add to the growing literature of Mexican-origin sibling relationships with a sample of pre-adolescent youth. Researchers should consider studying these effects further and incorporate findings to promote sibling relationships in prevention efforts of ATOD use in Latino youth, which has proven to be effective for European-American youth.

Limitations to the study and recommendations for future research are discussed.
ACKNOWLEDGMENTS

I would especially like to express my appreciation to my advisor, Dr. Rick Cruz, for his support and assistance throughout the entire process of this project. I could not imagine having a better mentor to challenge and guide me through my career as a graduate student. I would also like to thank my committee members, Drs. Melanie Domenech Rodríguez and Ginger Lockhart, for assisting me in the development of this project, and for their overall support during this process.

I give special thanks to my family and friends for their moral support and patience throughout my time in graduate school. I could not have done it without all of you.

Finally, I express my appreciation to the California Families Project team at the University of California, Davis (funded by the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism; DA017902), for being so generous in sharing the data that made this study possible.

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CHAPTER I
INTRODUCTION

In the U.S. approximately 54 million people (17%) identify as Hispanic or Latino (U.S. Census Bureau, 2014). This number continues to grow, and the growth of the Latino population accounted for nearly half of the increase in U.S. population between 2000 and 2010 (U.S. Census Bureau, 2010). Mexican-origin individuals are the largest Latino group in the U.S. (U.S. Census Bureau, 2014). In addition to their growing population, Latino individuals are on average the youngest ethnic group, with a median age of 27, compared to the median age for all of the U.S. at 37, and the youngest subgroup of Latinos are Mexican origin individuals (Motel & Patten, 2012).

In general, Latino youth have an increased risk for the early initiation of alcohol, tobacco, and other drug (ATOD) use when compared to their European-American (EA) peers, including a higher risk of initiation before the age of 13 (Center for Disease and Control Prevention [CDC], 2010; Shih, Miles, Tucker, Zhou, & D’Amico, 2010). Figures 1-3 illustrate the annual use of illicit drugs and marijuana and 30-day prevalence of alcohol for Hispanic, White, and African American adolescents in eight grade (Johnston, O’Malley, Miech, Bachman, & Schulenberg, 2015). These figures demonstrate that Hispanics have the highest rates of use for each substance at eighth grade compared to African American and White students. Although research has indicated that the significantly higher rates in ATOD use relative to other ethnic/racial groups begin to diminish in later high school years, this may be due in part to considerably higher dropout rates of Hispanic youth compared to White American and African American students that
Figure 1. Any illicit drug: Annual prevalence by race/ethnicity in eighth grade. Reprinted with permission from Johnston et al. (2015). See the Appendix for permission letter.
Figure 2. Marijuana: Annual prevalence by race/ethnicity in eighth grade. Reprinted with permission from Johnston et al. (2015).
Figure 3. Alcohol: Thirty-day prevalence by race/ethnicity in eighth grade. Reprinted with permission from Johnston et al. (2015).
impacts prevalence rates in school based surveys (Miech, Johnston, O’Malley, Bachman, & Schulenberg, 1975).

Given the growing MO population and overall young demographic age, early initiation of ATOD use among MO youth is an important public health concern. It is imperative to understand factors associated with early ATOD use for MO youth in order to develop or adapt prevention and intervention programs to better suit this population. Specifically, understanding how cultural and familial factors influence MO youth ATOD use is needed to inform family-oriented prevention programs for this group (Unger et al., 2004).
CHAPTER II
LITERATURE REVIEW

Theoretical Framework

To guide this study, I used Feinberg, Solmeyer, and McHale’s (2012) “third rail of family systems” framework and Szapocznik and Coatsworth’s (1999) Structural Ecosystems Theory (SET). Feinberg et al. characterized “sibling effects” as the influences of one sibling’s substance use and the sibling relationship quality on the adolescent’s later substance use. Further, they refer to sibling relationships as “the third rail of family systems” and describe the harmful influence of poor sibling relationships on developmental outcomes through three pathways: (a) negative interactions between siblings generalize to poor relationships with peers, (b) older siblings serving as role models to younger siblings who expose them to more deviant behaviors at an earlier age, and (c) coercive sibling relationships lead to impaired parenting, including poor parental monitoring and negative parent-child relationships. Previous research has consistently identified these three processes as risk factors for later substance use and conduct behavior among youth. Therefore, it is imperative to understand factors that influence the sibling relationship early on, as these relationships will generalize to those with peers and parents, which are also strong influences of ATOD use for youth (Feinberg et al., 2012).

Szapocznik and Coatsworth’s (1999) SET was strongly influenced by the work of Bronfenbrenner’s (1994) ecological systems theory, proposed that human development is organized into four interactive structures that influence the development of substance use.
in adolescents. *Microsystems* are considered the most proximal to development, as they are direct interactions of the child (i.e., family, friends, and school). *Mesosystems* represent the relationships between multiple microsystems, such as a family-school mesosystem where parents and teachers work together to foster academic growth, or a family-peer mesosystem where parents monitor peer relationships. *Exosystems* are contexts that impact the child indirectly by influencing mesosystems and microsystems, such as their parents’ social support network or experiences at work. Last, *macrosystems* are broad social and cultural ideologies that influence a child’s development, such as socioeconomic status or cultural values.

These four systems are central to a child’s development and evolve as the child ages. Szapocznik and Coatsworth (1999) recommend that researchers attempt to understand the interrelations between systems, instead of individual systems alone, when determining risk or protective factors for adolescent developmental outcomes. Sociocultural models such as SET are frequently used in addressing risk and protective factors for prevention of substance use in youth, as they allow us to consider the different contexts in which these factors exist (Substance Abuse and Mental Health Services Administration [SAMHSA], 2016). When focusing on Latino youth in particular, researchers highlight the importance of understanding the influences of cultural and family factors in particular, which research has suggested are crucial in Latino youth development, and is also evidenced by the nature of current prevention programs inclusion of family and culture into treatment for Latino youth (Szapocznik, Prado, Burlew, Williams, & Santisteban, 2007). Although sibling relationships are considered a
part of a microsystem, these relationships are influenced by factors in other systems, such as familism (traditional family values), which is part of a macrosystem. Taken together, these models emphasize the importance of understanding how sibling relationships influence adolescents’ developmental outcomes such as substance use, and how cultural and contextual processes may shape those sibling relationships. This study aims to understand whether and how cultural values and sibling relationships may intersect to influence risk for ATOD use among MO youth.

**Substance Use Development**

The period of time between pre-adolescence and young adulthood is considered a critical developmental period for the initiation and prevention of ATOD use (Copeland, Proctor, Terlecki, Kulesza, & Williamson, 2014). Many changes occur during this time, the most notable being the onset of puberty and substantial neural and cognitive development (Spear, 2000). Adolescents also experience a shift in societal responsibilities and developmental tasks, including developing autonomy and self-identity (Schwartz, Donnellan, Ravert, Luyckx, & Zamboanga, 2013; Wray-Lake et al., 2015). In addition, family and peer relationships begin changing, as adolescents shift to spending more time with their peers and siblings than with parents (Buhrmester, 1992; K. J. Conger & Little, 2010; Kim, McHale, Osgood, & Crouter, 2006). These biological, cognitive, and social changes have been shown to directly influence the development of ATOD use in adolescents (Brown et al., 2015; Castellanos-Ryan, Parent, Vitaro, Tremblay, & Séguin, 2013; Schwartz et al., 2013; Stanis & Andersen, 2014). However,
early intentions to use ATOD may serve as precursors to initiation of actual use.

There is robust evidence suggesting that early intentions of ATOD use during pre-adolescence is a strong predictor of later ATOD use in adolescence and adulthood (Pasch, Perry, Stigler, & Komro, 2009; Webb, Baer, Getz, & McKelvey, 1996). According to Ajzen’s (1991) Theory of Planned Behavior (TPB), an individual’s attitudes toward a behavior (i.e., whether they perceive the behavior favorably or unfavorably), subjective norms of a behavior (i.e., if they feel social pressure to engage in the behavior), and perceived behavioral control (i.e., how much control they believe they have in willingly performing the behavior) directly influence their intentions to engage in that behavior. Further, the more likely an individual believes they are to engage in a behavior, the more likely the behavior is to occur. This theory has been tested in relation to substance use among adolescents and has consistently been found that one’s intentions to use various substances are a significant predictor of their actual use of substances over time, including alcohol, tobacco, and marijuana use (Higgins & Conner, 2003; Marcoux & Shope, 1997; Smith, Bean, Mitchell, Speizer, & Fries, 2007; Van De Ven, Engels, Otten, & Van Den Eijnden, 2007; Webb et al., 1996).

Given the strong evidence supporting the TPB in predicting substance use among adolescents, it is important to understand more clearly the factors that influence youths’ intentions for ATOD use among MO youth specifically. Although there is great heterogeneity in substance use trajectories among youth, it is generally the case that ATOD use begins around adolescence (Chassin, Sher, Hussong, & Curran, 2013). Since the youth sampled in the current study are relatively young ($M_{age} = 10.46, SD = .60$), it is
also developmentally appropriate to assess intentions for ATOD use rather than actual ATOD use. An extension of Ajzen’s TPB found that cultural factors, such as family values, influenced MO youth’s intentions to use substances by influencing their perceived norms of use (Kam, Matsunaga, Hecht, & Ndiaye, 2009). While Kam et al. addressed one mechanism by which cultural values might influence youths’ intentions to using ATOD, it is important that we understand other mechanisms by which this can occur, such as their relationships with their siblings.

**Sibling Relationships**

A child’s relationship with their sibling is looked upon as one of the most complex and significant relationships they have during this developmental period, next to their relationship with parents. Unlike peer relationships, youth do not choose their siblings, and also spend more time with them than with parents or other friends (Feinberg et al., 2012; Updegraff, McHale, Killoren, & Rodriguez De Jesus, 2011). The quality and nature of the sibling bond can be influenced by many factors, including gender constellation, genetic relatedness, age gap, temperamental differences, and birth order (Brody, 1998; K. J. Conger & Little, 2010; Feinberg et al., 2013, 2012; Slomkowski, Rende, Conger, Simons, & Conger, 2001). Siblings have used adjectives such as companionship, intimacy, competition, and quarreling to identify the important factors of their sibling relationships (Buhrmester, 1992). Notably, a key feature that separates sibling relationships from parent or peer relationships is the normative aspect of high levels of conflict in early childhood, which drastically declines throughout adolescence.
(Buhrmester, 1992). Developmentally speaking, siblings experience many of life’s major events together, such as moving away, starting careers, marriage, and child bearing (K. J. Conger & Little, 2010). Although characterized by both negative and positive interactions during childhood, these relationships often evolve through adulthood as siblings begin to serve as one another’s support during these life events (Brody, 1998; Whiteman, McHale, & Soli, 2011; Yeh & Lempers, 2004). Sibling relationships become one of the very few lifelong relationships that individuals have (Updegraff et al., 2011).

Relative to studies on parent-child relationships, research on the influences of sibling relationships is scarce (McHale, Updegraff, & Whiteman, 2012). McHale et al.’s review of the limited literature indicated that sibling relationships can shape social-cognitive development and positive outcomes for adolescents, and that conflicts between siblings during childhood can lead to later adjustment problems. There is also evidence suggesting that siblings with positive relationships are more likely to later have higher self-esteem and better friendships with others and less likely to feel lonely or experience depression (Yeh & Lempers, 2004). Although limited, the available longitudinal research on the effects of sibling relationships on ATOD use has suggested that positive sibling relationships may serve as a protective factor for development of ATOD use over time, and that high levels of conflict in the relationship may be detrimental in the development of ATOD use among adolescents (Duncan, Duncan, & Hyman, 1996; Low, Shortt, & Snyder, 2012; Samek, Rueter, Keyes, McGue, & Iacono, 2015; Yeh & Lempers, 2004). In addition to understanding the effects of positivity and negativity in their relationships, sibling deviance is another aspect of sibling relationships that has been a recent focus
within the literature.

A substantial amount of research has indicated that sibling deviance may serve as a risk factor for the development of ATOD use for youth (Feinberg et al., 2012; Slomkowski et al., 2001; Stormshak, Comeau, & Shepard, 2004; Whiteman, Jensen, & Maggs, 2013). Sibling deviance can be characterized by behaviors that are considered antisocial or delinquent, such as using or selling substances, being involved in violence or gangs, or partaking in risky sexual behaviors (Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994). Studies have found that there is typically similarity in siblings’ report of involvement in deviant behavior (Slomkowski et al., 2001). Further, research in this area has indicated that when older siblings, in particular, are involved in these deviant behaviors, the younger sibling is at an increased risk of using ATOD (Duncan et al., 1996; Ober, Miles, Ewing, Tucker, & D’Amico, 2013; Stormshak et al., 2004; Whiteman et al., 2013). Researchers have found these influences to occur through encouraging one another to engage in delinquent behaviors, providing opportunities to do so, and reinforcing the behaviors (Feinberg et al., 2012; Slomkowski et al., 2001). Although Whiteman et al. (2013) found evidence suggesting that older sibling deviant behavior predicted deviant behavior in younger siblings for MO families, they did not account for any cultural factors that may be relevant for MO families into their study.

There is a dearth of research on sibling relationships within Latino families (Updegraff et al., 2011), especially in relation to ATOD use outcomes. Much of the current literature described above regarding the influences of siblings on adolescent development has been studied with European-American families. However, compared to
European-American families, Latino siblings spend more time with each other than with their parents, and much of this time typically includes caregiving, household tasks, schoolwork, and playtime (Updegraff et al., 2011). Research also suggests that Latino siblings are influenced by cultural factors, such as traditional family values (familism), which shape the quality of the sibling relationship (Kiloren, Rodriguez De Jesus, Updegraff, & Wheeler, 2015). Given relevant cultural differences, it is important to recognize that research with European American families cannot be assumed to generalize to Latino families (Updegraff et al., 2011). Therefore, it is important to further understand how cultural values about the family and sibling relationships may intersect to influence youth outcomes in Latino families.

Influences of Familism

On average, Latino families tend to be more collectivistic and interdependent compared to European-American families (Cauce & Domenech-Rodríguez, 2002; Zayas & Solari, 1994). In addition, Latino cultures are known to place a large emphasis on familism, a term used to describe traditional family values regarding strong relationships with both immediate and extended family (Cauce & Domenech-Rodríguez, 2002). Sabogal, Marin, and Otero-Sabogal (1987) define familism in three facets: (a) an understanding that individual’s behavior affects how family members are perceived, (b) relying on family members for support when problems arise, and (c) obligations to nuclear and extended family to provide financial and emotional support. A large majority of the research regarding familism has focused on the facet addressing attitudes towards
Current literature suggests that familism has a strong influence on a number of factors during youth development, including family relationships and problem behaviors (e.g., Killore et al., 2015; Marsiglia, Parsai, & Kul, 2009). However, familism has more commonly been studied in parent-child relationships, and the research on sibling relationships is less robust. The available literature on the influence of familism on sibling relationships indicates that youth who have higher endorsement of familism also report greater sibling intimacy (Updegraff, McHale, Whiteman, Thayer, & Delgado, 2005). Another study found that youth with greater familism values were more likely to resolve sibling conflict using solution (e.g., compromise and negotiation) and non-confrontational (e.g., avoidance) as opposed to controlling (e.g., competition and negativity) orientations (Killore, Thayer, & Updegraff, 2008). The authors suggested that these solutions were more often used in order to maintain harmony within the family, either by preventing anger between siblings with a non-confrontational orientation, or addressing the conflict directly with a solution orientation.

Familism has also been shown to protect against the negative effects of peer deviance on youth externalizing behavior problems (Brook, Whiteman, Gordon, & Brook, 1990; Germán, Gonzales, & Dumka, 2008). Germán et al. hypothesized that adolescents who endorsed more familism might internalize these values, making them more likely to fear disappointment of elders and help them resist conforming to their delinquent peers’ behaviors. However, to our knowledge, no studies have tested these effects in relation to older sibling deviance and younger sibling ATOD use specifically.
This study will further this literature by understanding whether familism values serve as a protective factor and moderate the relation between older sibling deviance to younger sibling intentions for ATOD use.

There is evidence suggesting that familism serves as a protective factor against the development of ATOD use in Latino youth (Ewing et al., 2015; Ober et al., 2013; Telzer, Gonzales, & Fuligni, 2014; Vega & Gil, 1998). However, other studies have not found a significant association between familism and ATOD use, indicating that there may be some errors in measurement or underlying variables influencing this relationship (Lac et al., 2011; Ramirez et al., 2004; Shih et al., 2010; Soto et al., 2011). For one, Ramirez et al. found that familism was a protective factor for substance use only if the adolescents were knowledgeable about the side effects of using substances or if they reported high parental monitoring. Lac et al. also found that after controlling for covariates such as age, gender, and place of birth, familism was no longer associated with marijuana use in Latino adolescents. As evidenced by these examples, there is inconsistency in the literature regarding the relation between familism and ATOD use. It should be noted, however, that many of these studies that did not find significant relationships used measures of familism with only a few items (Lac et al., 2011; Ramirez et al., 2004; Soto et al., 2011). Given the multiple facets of familism, it is not certain whether these scales accurately depict the complexity of the familism construct. This study will be able to expand this literature by including a measure of familism that assesses the three facets of familism that were previously described (emotional closeness, obligation to family, and family as a referent; Knight et al., 2010).
Clinical Implications

Currently, most programs aimed at preventing ATOD use in youth focus on enhancing peer and parent relationships (Dodge et al., 2006; Dunn & Mezzich, 2007). A recent focus of literature has shifted towards understanding the influences of sibling relationships on child and adolescent outcomes, and including these siblings in treatment approaches (McHale et al., 2012). However, these sibling focused interventions would be bolstered by additional research demonstrating the mechanisms by which sibling relationships influence child development. Without having an adequate understanding of the complex influences of these relationships, sibling focused interventions cannot be properly developed. Even more scarce in this area of literature is the research on Latino sibling relationships specifically, which are influenced by many cultural factors (Updegraff et al., 2005). While many researchers have made progress in tailoring current parent interventions to better suit minority families, these cultural adaptations for sibling interventions are scarce because of the limited data available (Matos, Torres, Santiago, Jurado, & Rodriguez, 2006).

In addition, research has indicated that adolescents are beginning to use ATOD at earlier ages, demonstrating a need for ATOD prevention efforts to begin before adolescent years (Pasch et al., 2009; Ried, Martinson, & Weaver, 1987). Prevention programs for ATOD use should also consider cultural adaptations for ethnic minorities in order to improve effectiveness (Botvin, 2004; Castro, Barrera, & Martinez, 2004; Unger et al., 2004). While current cultural adaptations mainly include *surface structure* (e.g., matching ethnicity of facilitators to target population) changes, there is a gap in the
literature specifying the appropriate \textit{deep structures} (e.g., values, beliefs, norms) of cultural minorities that need to be incorporated into these preventions (Castro et al., 2004). The aim of this study was to begin to understand the influences of familism on sibling relationships specifically as deep structures in preventing ATOD use for youth. Considering that MO youth are at an increased risk of early initiation of ATOD use, and the burgeoning number of young MO individuals, effective prevention programs are greatly needed for this population (CDC, 2010; Johnston et al., 2015; Motel & Patten, 2012). Consistent with our theoretical perspective, family is the most proximal and influential domain in a child’s development. An intervention aimed at the sibling level can also potentially impact the child’s relations with parents, peer interactions, and exposure to deviance, all of which are associated with ATOD use (Feinberg et al., 2012; Szapocznik & Coatsworth, 1999). By understanding the ways that sibling relationships and cultural factors intersect to influence child development, sibling focused preventions and interventions can be created to promote healthy and positive development of MO youth.

\textbf{Current Study}

This study aimed to extend prior research by further understanding the interaction of sibling relationships and familism on MO youths’ intentions to use ATOD. I conducted analyses to understand these relations using four models (see Figures 4, 5, 6 and 7, shown and discussed separately below). First, I conducted analyses to determine whether sibling relationship quality might serve as a moderator between familism and
ATOD use intentions (Hypothesis 1), or if sibling relationship quality is a mediator that explains the association between familism and ATOD use intentions (Hypothesis 2). My moderation hypothesis will help us understand if the relation between familism and ATOD use intentions depends on the strength of youth’s relationship with their sibling (Figure 4). I expected that the association between familism and ATOD use intentions will be stronger for youth who have a positive relationship with their sibling, compared to youth who have a more negative relationship with their sibling. Further, my mediation hypothesis will test whether the association between familism and ATOD use intentions can be explained by the youths’ relationship with their sibling (Figure 5). I expected that positive sibling relationships will at least partially explain the positive relation between these two variables. I also conducted moderation and mediation analyses to understand whether older sibling deviance might moderate the association between familism and younger sibling ATOD use intentions (Hypothesis 3), or if older sibling deviance might be a mediator in explaining the relation between familism and youths’ intentions to use ATOD.

**Figure 4.** Hypothesized model: Positive sibling relationship as a moderator.
ATOD (Hypothesis 4). The moderation hypothesis seeks to determine whether older sibling deviance might reduce the positive associations between familism and younger sibling ATOD use intentions (Figure 6). Lastly, the mediation hypothesis will further test whether older sibling deviance is a factor that explains the relation between familism levels and ATOD use intentions in MO youth (Figure 7).

These analyses will help us understand whether the outcomes of familism (more positive sibling relationships and less deviant sibling behaviors) are what explain the association between higher familism and lower levels of ATOD use intentions, and to see how familism might enhance or buffer the effects of sibling relationships and ATOD use intentions. More specifically, the moderation analyses will give researchers a better idea of who is most vulnerable for early initiation of ATOD use, and the mediation analyses can help us understand what is most important to address in treatment. Given the limited

![Figure 5. Hypothesized model: Positive sibling relationship as a mediator.](image-url)
time and resources of researchers and families, it is important that we know who is most at risk for initiation for ATOD use in order to focus our efforts on those individuals. For example, if it is found that older sibling deviance is a significant moderator of familism and ATOD use intentions, we can screen for youth with deviant older siblings early on and be sure they are included in prevention programs. If the mediation results are
consistent with the hypotheses, we can work towards promoting and enhancing these sibling relationships along with retaining familism values in intervention and prevention approaches for MO youth. This approach is consistent with my theoretical model, which emphasizes the importance of understanding the interrelations between multiple systems and addressing these influences in intervention and prevention programs.
CHAPTER III

METHODOLOGY

Design

The current study is a secondary analysis of data from the California Families Project (CFP), which is funded by the National Institute on Drug Abuse and the National Institute on Alcohol Abuse and Alcoholism (DA017902). The CFP is a large longitudinal study based out of the University of California at Davis (PI: Richard Robins). Participants were drawn at random from school rosters from two school districts in a metropolitan area of Northern California. Families with landlines were recruited by telephone, and those without listed telephone numbers were visited in their homes. Eligible families had to meet the following qualifications: (1) be Mexican-American or of Mexican origin, (2) have a child in fifth grade in a public or Catholic school, (3) the target child had to be living with their biological mother and (4) the target child must be first, second, or third generation Mexican origin.

Of the families meeting the requirements, 72.5% (N = 674) agreed to participate. Children were interviewed by research staff using laptop computers equipped with computer-assisted self-interviewing and were paid $50 for their participation. The interviews were conducted in either English or Spanish, based on the child’s preference. The families were visited on twice in a one-week period and the interviews lasted approximately three hours.
Participants

Of the 674 total families participating in the CFP, eligible participants of this study (N = 409) were limited to those families in which the target child had at least one older sibling. The target child had between 1-9 siblings, with an average of 2.58 (SD = 1.27), and 1.71 (SD = .95) of those were older siblings. The mean age of the target child was 10.46 (SD = .61) years old and the older sibling closest to them was 13.67 (SD = 5.44) years old. Participant demographics are listed in Table 1.

Measures

Substance Use Cognitions

Children’s intentions and expectancies to engage in substance use within the next year were assessed with a 9-item scale adapted from Gibbons et al. (2004). Sample questions include “Do you plan to drink alcohol in the next year?” and “How likely is it that you will smoke in the next year?” A 3- or 4-point scale was used for responses,

Table 1

Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>%</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (% male)</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean age</td>
<td>10.40</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>Number of siblings</td>
<td>2.16</td>
<td>1.26</td>
<td></td>
</tr>
<tr>
<td>Number of older siblings</td>
<td>1.09</td>
<td>1.12</td>
<td></td>
</tr>
<tr>
<td>Family income</td>
<td>$30,000 - $35,000</td>
<td>$20,000</td>
<td></td>
</tr>
<tr>
<td>Mother’s education (9th grade)</td>
<td>9.36</td>
<td>3.66</td>
<td></td>
</tr>
<tr>
<td>Household size</td>
<td>.54</td>
<td>1.69</td>
<td></td>
</tr>
</tbody>
</table>

N = 409.
ranging from 1 “Do not plan to/ Definitely will not/ Not at all willing” to either 3 “Very willing,” or 4 “Do plan to/ Definitely will.” Given that the distribution for this scale was not normal (see Figure 8), participants’ responses were dichotomized to create an index of those who had no intentions of substance use in the next year (90.8%, n = 355) and those who had at least some intention of substance use in the next year (9.2%, n = 36).

Older Sibling Behaviors (Multiple Older Siblings)

This scale was constructed from several sources. Fourteen items were taken from the Delinquent Behavior Scale (Thornberry et al., 1994), and evaluated the siblings’

Figure 8. ATOD use intentions distribution.
antisocial behavior in the last 3 months with questions such as “In the last 3 months, how many of your older siblings used alcohol to get drunk?” and “In the last 3 months, how many of your older siblings hit or threatened to hit someone?” An additional 6 items were adapted from the Self-Report Delinquency Scale from the National Youth Survey (Elliot, 1990), to ask youth to report on their sibling’s behaviors rather than their own. Example questions include, “In the last 3 months, how many of your older siblings used drugs or sniffed things to get high?” and “In the last 3 months, how many of your older siblings smoked cigarettes?” Participants responded to items using a 5-point Likert scale ranging from “None of them” to “All of them,” with higher scores indicating a greater number of older siblings who are involved in antisocial activity. This measure was dichotomized so that ‘0’ indicated no siblings engaged in the behavior, and ‘1’ indicated that at least one sibling engaged in the behavior.

**Older Sibling Behaviors (One Older Sibling)**

Items for this scale were the same as those listed above, however the questions were phrased for individuals who only had one older sibling. For example, questions were changed to “In the last 3 months, did [SIBLING NAME] use alcohol to get drunk?” and “In the last 3 months, did [SIBLING NAME] smoke cigarettes?” Participants responded with “yes” (coded as 1s) or “no” (coded as 0s).

**Relationship with Older Sibling**

Participants completed a 14-item scale was adapted from the Sibling Closeness Scale (R. D. Conger, 1989) and individual items used in the Iowa Youth and Families
Project, which assessed sibling relationships, including both harmony and negativity between siblings. After conducting a confirmatory factor analysis on these items, a one-factor solution was deemed most appropriate (see Figure 9).

This solution resulted in a shorter, 4-item scale which measures sibling negativity. Example items include: “How often does [SIB NAME] expects that everything will be done his/her way?” and “How often do you and [SIBLING NAME] argue with each other?” Participants responded using a Likert-type scale ranging from $1 = \text{almost never or never}$ to $4 = \text{almost always or always}$. Items were coded such that higher scores indicated more sibling negativity.

**Family Values (Familism)**

This measure is a 16-item subscale of the Mexican American Acculturation/Enculturation Scale (Knight et al., 2010). It assesses family support and emotional closeness, obligation to family, and family as a referent. Participants responded to

*Figure 9. Scree plot from explanatory factor analysis.*
questions such as “Children should always do things to make their parents happy” and “If a relative is having a hard time financially, one should help him or her out if possible” using a Likert-type scale ranging from 1 = not at all to 4 = very much. All items were scored such that higher scores indicated higher levels of familism. Although the Familism scale is composed of three separate subscales, a factor analysis of these items showed that a one-factor solution was most appropriate.

**Covariates**

Each model controlled for child gender (1 = female, 2 = male), mother education in years, and total household income.

**Analytic Strategy**

Data were analyzed using logistic regression analyses in SPSS and testing for indirect effects in Mplus Version 7.3 (Muthén & Muthén, 1998-2012). Each model controlled for child gender (1 = female, 2 = male), mother education in years, and total household income. Older siblings’ substance use was dummy coded (0 = no older siblings used the substance, 1 = at least one sibling used substance in question), and a count variable was created which reflected the number of substances used by any older sibling within the last 3 months.

**Missing Data**

To account for missing data, I used full information maximum likelihood estimates (FIML). Rather than deleting cases with missing data on one or more variables
in the equation, FIML estimates the parameters of missing data by using the information from the observed data. This procedure is preferable because it yields less biased parameter estimates relative to listwise deletion (Enders, 2001).

**Moderation Analyses**

To test for negative sibling relationship quality as a moderator, variables were entered in two steps. In step one, I entered our predictor variables and covariates using a simple logistic regression in SPSS. In step 2, I centered the predictor variables and created an interaction terms, and entered the term into a logistic regression equation. I then probed the interaction by examining the association between familism and SU intentions at 1 SD above and below the mean for sibling relationship quality (Hypothesis 1, Figure 4). To test for sibling deviancy as a moderator of familism and ATOD intentions, I used the dichotomous deviancy variable and ran the model in Mplus 7.3 (Muthen & Muthen, 2012). I entered the covariates, sibling deviancy, familism, and interaction term in one model and then probed the interaction by examining the association between familism and SU intentions at 1 SD above and below the mean for older sibling deviant behavior (Hypothesis 3, Figure 6).

**Mediation Analyses**

To test for indirect effects, I used bias-corrected bootstrapping with 2,000 bootstrapped samples in Mplus 7.3 (Muthen & Muthen, 2012). The bootstrap method has become the more preferred method for testing mediation over the years, in part because it does not require the assumption of normality on the distribution of the indirect effect,
which gives researchers greater power in testing for indirect effects (MacKinnon, Lockwood, & Williams, 2004). Using this method, a mediation model will be considered statistically significant if the obtained confidence interval does not contain zero. I ran two separate models (one for each mediation hypothesis, see Figures 5 and 7), to obtain estimates of the indirect effects and the 95% confidence interval to test for significance.
CHAPTER IV
RESULTS

Measure Descriptives and Bivariate Correlations

Means, standard deviations, possible ranges, and Cronbach’s alphas (α) for study variables are displayed in Table 2. An independent samples t-test indicated that there were significant mean differences between boys and girls in negative sibling relationship, \( t(404) = .08, p = .042 \), and ATOD intentions, \( t(407) = -1.52, p < .01 \). Specifically, boys reported less negative relationships with their siblings and higher intentions for ATOD use overall. Bivariate correlations indicated no significant correlations between variables (see Table 3).

Familism, Negative Sibling Relationship Quality, and ATOD Use Intentions

Moderation Analyses (Hypothesis 1)

Negative sibling relationship quality was examined as a moderator of the relation between familism and ATOD intentions. In step one, negative sibling relationship quality and familism were entered into the first step of the logistic regression analysis. Results

Table 2
Descriptive Data for All Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>( M )</th>
<th>( SD )</th>
<th>Possible range</th>
<th>Cronbach’s ( \alpha )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative sibling relationship</td>
<td>1.88</td>
<td>.62</td>
<td>1-4</td>
<td>.75</td>
</tr>
<tr>
<td>Familism</td>
<td>3.62</td>
<td>.31</td>
<td>1-4</td>
<td>.82</td>
</tr>
<tr>
<td>Sibling deviancy</td>
<td>1.16</td>
<td>2.05</td>
<td>0-20</td>
<td>.71, .72</td>
</tr>
<tr>
<td>ATOD intentions</td>
<td>.13</td>
<td>.34</td>
<td>0-1</td>
<td>.92</td>
</tr>
</tbody>
</table>
Table 3

*Bivariate Correlations Between Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Negative sibling relationship</td>
<td>-----</td>
<td>-.02</td>
<td>.06</td>
<td>.01</td>
</tr>
<tr>
<td>2. Familism</td>
<td>-----</td>
<td>-.01</td>
<td>-.07</td>
<td></td>
</tr>
<tr>
<td>3. Sibling deviancy</td>
<td>-----</td>
<td></td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>4. ATOD intentions</td>
<td>-----</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

indicated that neither negative sibling relationship \((b = .27, SE = .27, OR = 1.31, p = .32)\), nor familism \((b = -.72, SE = .52, OR = .49, p = .17)\) were significant predictors of ATOD use intentions. Next, the interaction term between negative sibling relationship quality and familism was added to the regression model. This term was also not significant \((b = -.27, SE = .87, OR = .77, p = .77)\), indicating that negative sibling relationship quality did not serve as a moderator between familism and ATOD use intentions.

**Mediation Analyses (Hypothesis 2)**

To investigate whether negative sibling relationship quality mediated the relation between familism and ATOD use intentions, I conducted 2,000 bootstraps and obtained bias-corrected confidence intervals in a path analysis using Mplus Version 7.3 (Muthen & Muthen, 2012). Results indicated that the indirect effect of negative sibling relationship quality tested using bias-corrected bootstrapped methods was not significant \((b = -.01, SE = .04, 95\% CI = -0.12, .05)\). These findings do not support the hypothesized mediational model.
Familism, Sibling Deviancy, and ATOD Use Intentions

Moderation Analyses (Hypothesis 3)

Older sibling deviant behavior was examined as a moderator of the relation between familism and ATOD intentions. Results indicated that neither older sibling deviancy \( (b = .24, SE_b = .33, OR = 1.27, p = .48) \), nor familism \( (b = -.85, SE_b = .69, OR = .43, p = .22) \) were significant predictors of ATOD use intentions. Further, the interaction term was also not significant \( (b = .38, SE_b = .94, OR = 1.47, p = .68) \), indicating that older sibling deviant behavior did not serve as a moderator between familism and ATOD use intentions.

Mediation Analyses (Hypothesis 4)

To investigate whether older sibling deviancy mediated the relation between familism and ATOD use intentions, I conducted 2,000 bootstraps and obtained bias-corrected confidence intervals in a path analysis using Mplus Version 7.3 (Muthen & Muthen, 2012). Results indicated that the indirect effect of older sibling deviancy tested using bias-corrected bootstrapped methods was not significant \( (b = -.00, SE = .04, 95\% CI = -0.10, .05) \). These findings do not support the hypothesized mediational model.
CHAPTER V
DISCUSSION

The purpose of the current study was to understand the explanatory/interactive effects of sibling relationships and familism on MO youths’ intentions to use ATOD. I hypothesized that: (1) the association between familism and ATOD use intentions would be stronger for youth who have a positive relationship with their sibling, compared to those youth who have a more negative relationship with their sibling; (2) the association between familism and ATOD use intentions would be explained by the youths’ relationship with their sibling; (3) higher levels of older sibling deviancy would reduce the positive associations between familism and younger sibling ATOD use intentions; and (4) older sibling deviancy would explain the relation between familism and youths’ intentions to use ATOD.

None of the hypotheses were confirmed in this study. While there can be many reasons for this, one hypothesis is that the null findings may be due to the young overall age of our participants ($M_{age} = 10.46, SD = .60$). The studies mentioned which have found significant effects of familism or sibling relationships in relation to ATOD use had participants who at least reached their teenage years, or used a longitudinal design such that the participants’ ages at the last time point were much older (Duncan et al., 1996; Low et al., 2012; Samek et al., 2015; Slomkowski et al., 2001; Stormshak et al., 2004; Whiteman et al., 2013; Yeh & Lempers, 2004). Because of the young age of the current sample, it is possible that youth were too young to begin formulating intentions for using ATOD. In addition, it is possible that the influences of family and culture addressed in...
this study do not have a significant impact on youth until a later age, since the studies which have found significant effects of family and cultural factors on ATOD use also sampled older adolescents. I expect that if this study were conducted using an older age range or with a longitudinal design, the results would potentially be different. Another potential explanation for the null findings is that I was too limited in our use of measures in order to adequately address the influences of familism and sibling relationships. I acknowledge that there are other factors that might be interacting with these processes, such as parent monitoring, acculturation levels, or child’s self-regulation abilities. While I did not include these factors in the current analyses, they will be considered for future directions. Lastly, although MO youth are generally an at-risk population, this study uses a community sample of participants who may not be as vulnerable for developing a pattern of ATOD use. I acknowledge that our results may have been different if I used a sample of youth who are previously considered high-risk, a strategy that has been used by others (Ewing et al., 2015).

Although the findings in this study did not support our hypotheses, it is still worthwhile to discuss the relevance of familism and sibling relationships on ATOD use prevention efforts. MO siblings spend more time together than with parents or peers (Updegraff et al., 2011), and these relationships have been shown to influence adolescents’ use of ATOD in previous work (Samek et al., 2015; Slomkowski et al., 2001). While the literature suggests that these relationships are highly influential, the inclusion of siblings in prevention and intervention efforts has been slow to follow (McHale et al., 2012), especially considering the number of programs aimed at parents or
peers available for preventing ATOD use (Dodge et al., 2006; Dunn & Mezzich, 2007).

Two established prevention programs that center on promoting sibling relationships include “Siblings are Special” and “Fun with Brothers and Sisters” (Feinberg et al., 2013; Kramer & Radey, 1997). The first program, “Siblings are Special,” includes 12 sessions aimed to enhance socio-emotional competencies in sibling relationships in order to prevent behavior problems among youth. The results from a randomized trial indicated that the adolescents who participated in the intervention had significantly lower levels of internalizing behavior problems, higher self-control, higher social competence, and higher academic performance at posttest compared to control children (Feinberg et al., 2013). The second program, “Fun with Brothers and Sisters,” includes four sessions of social skills training for children ages 4 to 6 to promote prosocial sibling interactions. Examples of the social skills taught in the program include appropriately accepting and refusing invitations to play, emotion-regulation for angry feelings, and managing conflict. The results of a randomized trial found that the siblings in the experimental condition had significant decrease in rivalry, a decrease in perceived status/power differential, increase in warmth, and overall fewer negative sibling interactions at posttest (Kramer & Radey, 1997). While both of these programs are intended to enhance sibling relationships, they also recommend that parents are included in the sessions. “Siblings are Special” involves parents by teaching them skills to manage sibling relationships, and “Fun with Brothers and Sisters” teaches parents how to maintain their children’s learned social skills in the home. Kramer (2010) discussed other ways to incorporate parents in sibling-focused preventions, including modeling social
behaviors, avoiding differential treatment of their children, and responding to sibling conflict in an appropriate manner. Overall, these programs show promise for the effectiveness of promoting sibling relationships in prevention and intervention programs, and should be used to inform developing programs tailored to Latino youth.

A sibling-focused prevention program for ATOD use could attend to teaching a number of skills in order to enhance the quality of the sibling relationship. While most parent or peer focused programs will aim to reduce any conflict in the relationships, it is not necessarily the case that this should be a goal for siblings, given the normative aspect of conflict between siblings (Kramer, 2010). More importantly, programs should teach siblings to use effective conflict management strategies and problem solving skills to resolve conflict in ways that are adaptive (Kramer, 2010). Along with this, prevention programs could encourage siblings to engage in more positive interactions, such as playtime, trust building exercises, perspective-taking, and social/emotional understanding. By focusing on these more positive skills instead of reducing conflict, aiblings will be better equipped to restore their relationship from conflict situations when they occur, and will learn to generalize these skills to other relationships (Kramer, 2010; Kramer & Radey, 1997). Further, given the importance of family in Latino families, it would be valuable to incorporate parents or other family members in developing programs in the ways mentioned previously. It would also be advantageous to focus on retaining traditional cultural values such as familism in sessions, as this has previously been found to protect against ATOD use in Latino youth. By targeting different family relationships and cultural values in treatment, I are able to address the multiple contexts that influence
youth through a prevention lens, as recommended by the structural ecosystems framework (Szapocznik & Coatsworth, 1999).

**Limitations**

It is worthwhile to note that this study has a number of limitations. An important one is regarding the overall young sample ($M_{age} = 10.46$, $SD = .60$), and the impact of this on the ATOD use intentions measure. At a pre-adolescent age, it is likely that many of these individuals have not yet considered whether they will engage in the behaviors asked. It is also possible that, although they were informed their answers would be kept private, they are at an age where they may be concerned about reporting to perceived authority figures and might feel judged or threatened if they admit to wanting to try a specific substance. Overall, I had very positively skewed variable with few youth endorsing ATOD use intentions ($n = 36$; see Figure 8), which was addressed as best I could by making it dichotomous. However, it is very likely that the low variability in this measure led to low levels of power in the logistic regression models which made it harder to detect any effects that may have been present. Further, I also are at a disadvantage because I am only using child self-report for this study, which makes it hard to know how accurate the reports are. Lastly, this data was collected in a larger, metropolitan city in Northern California, and the results are unable to be generalized outside of that population.
**Future Directions**

As previously mentioned, future research should aim to conduct a longitudinal study in order to whether familism and sibling relationships processes influence ATOD use intentions over time. It is also recommended that future studies use a sibling relationship quality measure that has more research backing and found to be more reliable and valid. Although I was able to yield a four-item negativity measure using confirmatory factor analysis, it would have been to my advantage if I was able to assess both harmony and negativity in the relationship. Because this study uses secondary data, I did not get to choose the measures, and acknowledge that it might have been beneficial if I had that option. In addition, future studies should aim to obtain more information regarding the sibling-dyad and interview the other sibling for more data regarding their use of substances and perception of the relationship. Lastly, it is recommended that an older age range of participants be used, in order to increase the likelihood that the adolescents will have considered more intently whether they will engage in ATOD use.

**Conclusions**

The present study aimed to fill a gap in the literature regarding the influences of familism and sibling relationships on Latino youths’ ATOD use intentions. While the results were not as expected, it is still worthwhile to discuss its’ implications. As research on sibling relationships in Latino families continues to emerge, this study was able to add to this growing literature with a sample of pre-adolescent youth. While keeping the limitations in mind, the results of this study suggest that familism and sibling
relationships do not play a large role in pre-adolescent MO youth’s intentions for using ATOD. Future studies should consider a similar design with older participants who may have more intentions of ATOD use, in order to assess the influences of familism and sibling relationships with greater variability. Research has shown promise for positive impacts of sibling-focused prevention programs (Feinberg et al., 2013; Kramer & Radey, 1997), and should consider incorporating current findings regarding Latino youth to create prevention efforts of ATOD use in Latino adolescents given their heightened risk (CDC, 2010; Johnston et al., 2015).
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APPENDIX: PUBLIC DOMAIN NOTICE
Carola Carlier <ccarlier@umich.edu>

May 31

to me, MTF

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Best wishes,
Carola

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