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Perceived Discrimination as a Risk Factor for Latina/o Youth's Substance Use: Do Parent- and Peer-Based Communication and Relationship Resources Act as Protective Factors?

Jennifer A. Kam and

School of Communication, The Ohio State University

Michael J. Cleveland

The Methodology Center, The Pennsylvania State University

Abstract

Based on general strain theory, it was hypothesized that as Latina/o youth experience perceived discrimination, they are more likely to develop acculturation stress and, in turn, more likely to use substances. Two additional hypotheses were set forth to examine how parent- and peer-based communication, relationship, and norm resources may function as buffers, thereby decreasing the likelihood that strained youth will use substances. Latina/o youth ($N = 728$) from 23 schools in Phoenix, AZ, completed surveys at three waves over 2 years. Structural equation modeling (SEM) results supported the first hypothesis. Yet, contrary to the second hypothesis, neither parent nor peer resources were significant moderators. Implications are discussed for theory and parent- and peer-based prevention research directed at perceived discrimination, acculturation stress, and substance use.

In 2002, U.S. national survey data revealed that over 80% of Latinas/os reported experiencing perceived discrimination (National Survey of Latinos, 2002), a culturally based stressor that has implications for individuals' mental health and health-related behaviors. Discrimination, a communicative act, occurs as behavioral manifestations of prejudice in the form of unfair treatment. Perceptions of discrimination are recollections of being treated unfairly as a result of others' negative attitudes based on inflexible stereotypes (Hecht, 1998). Yet, despite this phenomenon's prevalence among Latinas/os, research on perceived discrimination's effects on mental health and health-related behaviors among this group remains limited (Araújo & Borrell, 2006). Although the experience of perceived discrimination is itself bad, various more pervasive and negative outcomes are often experienced because of the resulting distress, such as low self-esteem (Moradi & Risco, 2006), substance use (Gibbons et al., 2007), and poor academic performance (DeGarmo & Martinez, 2006).

In particular, Latinas/os, who comprise the largest and fastest growing subpopulation in the United States (15%; U.S. Census Bureau, 2008), are especially susceptible to perceived discrimination and alcohol, tobacco, and other drugs (also commonly referred to as ATOD) use. Latina/o youth reported experiencing perceived discrimination in the forms of being teased or singled out based on their linguistic skills and accent in addition to their physical characteristics (Ajayi, 2006), and they reported the highest rates of adolescent substance use across most substances in the last decade (Johnston, O'Malley, Bachman, & Schulenberg,

2007). Further, adolescents are at a developmental stage where their attitudes toward ATOD are changing and in which early experimentation with ATOD is an indicator of later substance use dependency and abuse (Stipek, de la Sota, & Weishaupt, 1999). Consequently, understanding the relation between perceived discrimination and Latina/o adolescent substance use has both practical and theoretical importance.

One theoretical explanation for the health implications of perceived discrimination emerges from general strain theory (GST; Agnew, 1992). Based on GST, individuals who encounter a noxious stimulus (i.e., strain) such as perceived discrimination are likely to develop a negative psychological response (e.g., anger, anxiety, distress). General strain theorists predict that individuals are likely to engage in problem behaviors (e.g., substance use, theft, revenge) to manage their negative psychological reaction to the strain. This influence, however, is not inevitable (Agnew, 2001). Protective factors such as parent- and peer-based communication, relationship, and norm resources may allow victims to handle their strain, decreasing the likelihood that they will rely on problem behaviors (Broidy & Agnew, 1997).

Given the potentially harmful effects of perceived discrimination on mental health and health-related behaviors, this study tests a theoretically derived mediation model of perceived discrimination's indirect effects on ATOD use through acculturation stress. Further, this study examines the potential for parent and peer communication, relationship, and norm resources to attenuate acculturation stress's effect on ATOD use. Testing these potential moderators sheds light on possible resources to promote in culturally-grounded substance use prevention.

GENERAL STRAIN THEORY AS AN EXPLICATION OF PERCEIVED DISCRIMINATION'S EFFECTS

The basic premise of GST (Agnew, 1992) is that exposure to a strain or stressor is likely to induce negative feelings, and to attenuate such feelings, individuals may engage in problem behaviors such as ATOD use, theft, or violence. Strains develop from three sources (Broidy & Agnew, 1997): failing to fulfill desired goals, encountering negative stimuli, and/or having a valued stimulus taken away. Perceived discrimination has the potential to act as strain in all three ways. For instance, Latina/o adolescents reported being teased and laughed at by their classmates because of their linguistic skills, an experience that exemplifies (1) being exposed to a negative stimulus, (2) having their sense of comfort and security removed, and (3) being prevented from fulfilling the goal of social acceptance (Ajayi, 2006). When individuals lack the appropriate resources (e.g., supportive social network, self-efficacy, positive self-concept; Agnew, 2001), they are more likely to deal with the negative affect by engaging in problem behaviors.

Of course, using problem behaviors to cope with the negative affect is not inevitable (Brezina, 1996). General strain theorists (e.g., Agnew, 2001) argue that individuals who perceive strains as unjust and of high degree are more likely to use problem behaviors as coping mechanisms. Perceived discrimination is a threat to individuals' well-being, and individuals are likely to develop negative psychological responses when being treated in an unfair manner. The overwhelming feeling of being mistreated and threatened, accompanied by limited coping resources (e.g., lack of supportive network, lack of self-efficacy, negative self-concept), is likely to make problem behaviors more appealing (Pérez et al., 2008).

When considering the numerous ways in which individuals may respond to strains, Agnew (1992) described three primary ways: escape-avoidance, compensation, and retaliation. With perceived discrimination, Latina/o adolescents may attempt to escape or avoid the strain by engaging in substance use (Eitle & Turner, 2003). Alternatively, strained Latina/o

adolescents may compensate for their negative affect by using substances to replace such negative feelings with positive ones (cf. Brezina, 1996). Individuals who experience the removal of a valued stimulus or who are deprived of a valued stimulus (e.g., feeling accepted or being treated equally) may try to obtain the desired stimulus through force or turning to substances. Finally, strained individuals may seek revenge by behaving aggressively, vandalizing, or adopting other types of retaliatory behaviors to regain a sense of power, control, and justice (Brezina, 1996). Thus, reactions to strain may transpire in a number of ways (Aseltine, Gore, & Gordon, 2000).

Perceived discrimination's negative effect on mental health seems particularly apparent for Latina/o youth, who reported more distress as they experienced perceived discrimination (DeGarmo & Martinez, 2006). Yet few studies have considered perceived discrimination's indirect effects on health-related behaviors among Latina/o youth. ATOD use provides a way for individuals to escape, avoid, and compensate for the negative feelings resulting from perceived discrimination. Latina/o adolescents may engage in a variety of problem behaviors (e.g., violence, revenge, and self-destruction); however, this study focuses on ATOD use because Latina/o adolescents report some of the highest rates and they are at a developmental age where ATOD use attitudes are changing (Stipek et al., 1999). GST, then, provides a rich but rarely tested theoretical explanation of discrimination's effects on ATOD use (Agnew, 2001).

Acculturation Stress as a Mediator Between Perceived Discrimination and ATOD Use

Given that general strain theorists (Agnew, 2001) equate strains to stressors, these strains lead to negative psychological reactions that, in turn, have an effect on problem behavior. Past research (e.g., Pérez et al., 2008) on GST found anger as an intervening variable between strain and crime. Yet when considering ATOD use, Aseltine et al. (2000) revealed that among high school students anger only predicted aggressive behaviors but not marijuana use, and anxiety did not predict any of the outcomes. Past research examining potential mediators yields mixed support for anger. Consistent with previous findings, Agnew, Brezina, Wright, and Cullen (2002) stated that "the impact of strain on delinquency is at least partly mediated by negative emotions like anger" (p. 43). Hence, the traditional negative emotional responses (e.g., anger, frustration, depression) to strain are only several of other possible intervening variables (Brezina, 1996). In the context of culturally based perceived discrimination, this study examines how this strain predicts a different type of negative psychological response, acculturation stress, and whether this type of reaction has an effect on substance use.

Acculturation stress refers to the negative psychological experience stemming from the acculturation process (Miranda, Bilot, Peluso, Berman, & Meek, 2006). In particular, acculturation stress may manifest in a variety of forms such as generational gaps in cultural perspectives, language difficulties, cultural clashes with others from the U.S. mainstream, or feeling caught between multiple cultures (Vega, Zimmerman, Gil, Warheit, & Apospori, 1993). Although immigrants most commonly experience acculturation stress, past studies reveal that second-generation youth also may develop acculturation stress when feeling a disconnect between their parents' culture and mainstream U.S. culture. Acculturation stress for second-generation youth often develops from a stronger sense of awareness with respect to differing cultural practices and identities, rather than lacking knowledge of U.S. mainstream culture and the English language (cf. Crockett et al., 2007).

Although much of the GST literature (e.g., Aseltine et al., 2000) concentrates on anger as a reaction to strain, culturally based perceived discrimination among Latina/o youth is rooted in the acculturation process. Finch and Vega (2003) suggest that perceived discrimination is one stressor in particular that leads to acculturation stress. Perceived discrimination may

occur between ethnic groups and within ethnic groups (Codina & Montalvo, 1994). As youth experience unfair treatment from others, cultural disparities and differences between cultural groups may become more salient. Such experiences may manifest as acculturation stress, and as a coping strategy, Latina/o youth may turn to substance use (Pérez et al., 2008). Thus, this study extends the research on GST by posing the following hypothesis to consider a psychological reaction relevant to the acculturation process.

H1: Among Latina/o youth, acculturation stress mediates the effects of perceived discrimination on ATOD use such that: (1) perceived discrimination is positively associated with acculturation stress and (2) acculturation stress is positively associated with ATOD use.

Like most stressors, however, perceived discrimination may not necessarily lead to negative outcomes (Agnew, 2001). Protective factors may exist that can ameliorate these effects (Crockett et al., 2007). In the case of perceived discrimination, parents and peers can prepare youth for perceived discrimination and help them process the experiences when they occur (Barr & Neville, 2008; Gibbons, Gerrard, Cleveland, Wills, & Brody, 2004).

PARENT–CHILD COMMUNICATION, RELATIONSHIP, AND NORMS AS PROTECTIVE FACTORS

Parents play an important role as a protective factor against ATOD use for youth (Miller-Day & Dodd, 2004). In the context of perceived discrimination, Agnew (1992, 2001) suggests that youth may depend on their social network (e.g., parents and peers) to deal with their strain, thus relying on healthier resources. This may be particularly true in Latina/o culture because of its emphasis on close family and intergenerational relationships (Guilamo-Ramos et al., 2007; Halgunseth, Ispa, & Rudy, 2006). Nevertheless, not all parents use the same strategies to protect their offspring from the impact of perceived discrimination. Some parents teach healthy ways of handling stressful experiences, while others provide unhealthy ways of coping or even provide negative examples (Neblett et al., 2008). Consequently, it is important to consider not only overall parental influence, but also specific parenting strategies, as potential moderators.

Targeted Parent–Child Communication About Alcohol

Despite past research pointing to general openness in parent–child communication as a predictor of decreases in substance use (Kafka & London, 1991), Miller-Day and Kam (2010) argue that conversations directly about problem behaviors may be more influential than general conversations. Unlike general openness in parent–child communication, which refers to openly conversing about any topic, examining parent–child communication about topics such as alcohol refers to “sit-down” discussions with offspring about the consequences of consuming alcohol (Miller-Day & Dodd, 2004). Parents may discuss alcohol use with their children by warning them of the consequences in drinking alcohol, clarifying media’s representation of alcohol, or explaining how to handle offers to consume alcohol. In the context of perceived discrimination, such targeted parent–child communication about alcohol may serve as a resource for Latina/o youth who experience acculturation stress from perceived discrimination. Latina/o youth who have talked to a parent specifically about alcohol may be less likely to use it (and other substances) when experiencing acculturation stress from perceived discrimination. If faced with the opportunity to use ATOD, these youth may remember the discussions they had with a parent and turn to alternative and healthier ways to handle their negative experiences.

Parental Monitoring Knowledge and Behaviors

Past research also points to parental monitoring knowledge and behaviors as important protective factors against risky behavior, including ATOD use (Li, Stanton, & Feigelman, 2000). Parental monitoring knowledge refers to parents' awareness of their child's behaviors or peer associations, such as knowing their child's peers and what their child does in his/her free time. This knowledge is often based on parental monitoring behaviors, a communicative process where parents actively seek information about their child's behaviors, ask where he/she is going, or tell him/her when to be home (Li et al., 2000). Parental monitoring knowledge and behaviors may decrease the likelihood that strained youth will use substances to deal with acculturation stress resulting from perceived discrimination. Parents who engage in parental monitoring knowledge and behaviors are likely to make obtaining substance use more difficult for their offspring. If youth seek a way to escape from their strain, having parents who actively ask and know of their offsprings' whereabouts, peers, and activities may discourage youth from perceiving substance use as an easily accessible solution. In contrast, low levels of parental monitoring knowledge and behaviors have been found to be associated with an increase in delinquent peers, which increases the likelihood that substances are more easily accessible (Laird, Criss, Pettit, Dodge, & Bates, 2008). In short, adolescents with low levels of parental monitoring knowledge and behaviors may be more likely to use ATOD to escape their strain.

Parent–Child Closeness

Parent–child closeness is also likely to limit the potential impact of acculturation stress on ATOD use caused by perceived discrimination (Rumbaut & Portes, 2001). Parents who share a close relationship with their offspring are likely to provide support by “being there” for their children and to express warmth, attention, and understanding (Golish, 2000). Past research on parent–child closeness documented that youth are less likely to engage in problematic behaviors as they feel closer to a parent (Dickerson & Crase, 2005), a result also found among Latina/o adolescents (Mogro-Wilson, 2008). Parent–child closeness in the form of understanding may offer youth a sense of security, thus mitigating the effect of acculturation stress on ATOD use.

Parent Anti-ATOD Injunctive Norms

A final important parent factor to consider comprises the attitudes and beliefs that parents hold regarding ATOD use. These attitudes and beliefs are called injunctive norms and are rooted in culturally grounded views of acceptable behavior (Reno, Cialdini, & Kallgren, 1993). Injunctive norms represent perceptions of how individuals should behave, and they are motivated by the belief that engaging in a particular action (e.g., ATOD use) has social rewards or punishments (Elek, Miller-Day, & Hecht, 2006). Youth who hold parent anti-ATOD injunctive norms believe their parents would find engaging in substance use unacceptable, and these youth are less likely to use ATOD (Elek et al., 2006). In contrast, youth are more likely to report ATOD use if they believe their parents hold pro-ATOD norms (Brody, Ge, Katz, & Arias, 2000). Strained Latina/o adolescents may be less likely to use ATOD to alleviate their acculturation stress if they perceive such behaviors will induce disapproval from their parents. Brezina (1996) suggested that using problem behaviors to cope with strain may be appealing only when it is not accompanied by additional negative consequences such as punishment and scorn. The perception that parents will find substance use an unacceptable behavior is likely to discourage strained adolescents from engaging in ATOD as a coping mechanism.

This study argues that the likelihood that Latina/o youth use substances as a way to cope with their acculturation stress from perceived discrimination depends on the degree to which these youth communicate with a parent about alcohol, perceive that a parent monitors and

knows of the adolescent child's peers and activities, establish a close relationship with a parent, and believe that a parent would be angry if they used ATOD. Thus, it was hypothesized that:

H2: Among Latina/o youth, targeted parent–child communication about alcohol, parental monitoring knowledge, parental monitoring behaviors, parent–child closeness, and parent anti-ATOD injunctive norms act as moderators that attenuate the effects of acculturation stress on ATOD use.

PEER INFLUENCES AS PROTECTIVE FACTORS

In addition to parents as a resource that strained Latina/o youth may draw upon, GST (Agnew, 1992) suggests that youth also may rely on their peers to deal with their strain. Peers may buffer the effect of acculturation stress on ATOD use by providing social support to strained youth (DeGarmo & Martinez, 2006). Conversely, peers who themselves engage in ATOD use or who find such behavior acceptable may negatively influence strained youth by providing opportunities for ATOD use, reinforcing the behavior, or presenting ATOD use as a comforting solution. Although many peer variables could be examined, this study focuses on peer injunctive and descriptive norms regarding ATOD use, which past studies found to strongly impact ATOD use behaviors (Elek et al., 2006; Kam, Matsunaga, Hecht, & Ndiaye, 2009).

Friend Anti-ATOD Injunctive Norms

Relationships with peers emerge during early adolescence; thus, adolescents' perceptions of what peers deem acceptable and, in particular, their views of substance use acceptability (i.e., friend anti-ATOD injunctive norms) are also expected to influence the relation between acculturation stress and ATOD use (Kam et al., 2009). Elek et al. (2006) documented that the more adolescents in their study believed their peers would react negatively to engaging in substance use, the less likely these adolescents were to engage in such behavior. For Latina/o youth experiencing acculturation stress from perceived discrimination, friends' disapproval of ATOD use is likely to weigh heavily on substance use decisions and, more importantly for the current study, to discourage substance use as a coping mechanism in response to acculturation stress. If strained youth consider partaking in substance use, the perception that their friends disapprove of such behavior is likely to deter them from engaging in substance use. These effects also may result from the perception of a broader notion of normative behavior called descriptive norms.

Anti-ATOD Peer Descriptive Norms

Youth with anti-ATOD descriptive norms believe that the prevalence of substance use among their peers is low (Kam et al., 2009) and are less likely to use substances themselves (Elek et al., 2006). In this study, it is postulated that when Latina/o youth experience acculturation stress as they encounter perceived discrimination, ATOD use is less likely to appear appealing if these youth believe few peers engage in such behavior. Agnew (1992) suggested that strained youth are at greater risk of turning to problem behaviors when they associate with delinquent peers because they tend to perceive such behavior as acceptable. Also, associating with delinquent peers often makes such behaviors easy to participate in when, for instance, such peers have access to substance use (Aseltine et al., 2000). Strained youth are more likely to turn to ATOD use if they believe most of their peers participate in such behaviors. Based on GST and past research on peer influences, the following hypothesis was set forth:

H3: Among Latina/o youth, peer anti-ATOD injunctive and descriptive norms act as moderators that attenuate the effects of acculturation stress on ATOD use.

METHOD

Participants

This study includes data primarily from Waves 4, 5, and 6 of a larger study intended to evaluate a National Institute on Drug Abuse (NIDA)-funded school-based substance use prevention program. Latina/o seventh- and eighth-grade students ($n = 728$) from 23 public middle schools in Phoenix, AZ, provided self-report longitudinal data. Latina/o youth comprised 80% of the overall sample ($n = 906$) at the fourth wave. Because the distribution among other ethnic groups was too small to permit statistical comparisons, this study was limited to a sample of Latina/o youth. At the fourth wave, 62% of these adolescents self-identified as Mexican American, 31% as Mexican, and 7% as Other Latina/o. In Wave 4, 728 Latina/o youth completed the survey, 628 in Wave 5, and 546 in Wave 6. Waves 4 through 6 were collected over a 2-year period, with each wave of data collected once per school semester. The Latina/o youth at Wave 4 reported an average age of 12.3 years ($SD = .58$), with 54% self-identifying as female. Among the Latina/o youth at Wave 4, 74% of the youth were born in the United States and 26% were born in Mexico. In contrast, 71% reported that their mother was born in Mexico (24% in the United States, 2% in another country, and 3% did not know) and 72% reported that their father was born in Mexico (19% in the United States, 2% in another country, and 6% did not know). Lastly, 64% of the Latina/o youth had lived in the United States for their entire life, 13% more than 10 years, 12% between 6 and 10 years, and 11% between 1 and 5 years.

Procedure

At each wave, students completed surveys in homeroom, science, or health classes, while a trained proctor was present. Survey completion took approximately 45 minutes. Parents provided informed consent and students provided informed assent before filling out the surveys. Because a substantial proportion of the students were of Latina/o descent, one side of the survey was in English and the other side was in Spanish. Rogler's (1989) method of back-translation was used, where project personnel translated the English version of the survey into Spanish and then translated the Spanish version back into English. Only 4% of the Latina/o students completed the survey in Spanish at Wave 4, a percentage too small to analyze separately.

Measures

Perceived discrimination was measured at Wave 4. Acculturation stress, targeted parent-child communication about alcohol, parental monitoring knowledge, parental monitoring behaviors, parent-child closeness, parent anti-ATOD injunctive norms, friend anti-ATOD injunctive norms, and anti-ATOD descriptive norms were measured at Wave 5. The outcome variable, last-30-days ATOD use, was measured at Wave 6. Items were modified to make them age appropriate as needed, and subsets of scales were used due to time constraints imposed by the school setting. The scales were pilot tested and examined for readability level and found to be appropriate for the students (see Table 1 for summary statistics and reliabilities).

Perceived discrimination—Five items were created based on Mena, Padilla, and Maldonado (1987), Romero and Roberts (2003), and Vinokurov, Trickett, and Birman (2002) to measure perceived discrimination. Students responded using a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). The introduction asked, "Thinking about your ethnic group (race or culture), do you agree or disagree with the following?" Sample items included: "Kids at school say bad things or make jokes about me because of my ethnic group" and "Kids my age exclude me from their activities or games because my ethnic group is different."

Acculturation stress—Five items were created based on Gil, Vega, and Dimas (1994), Mena et al. (1987), Romero and Roberts (2003), and Vinokurov et al. (2002). The introduction stated, “Are the following situations a problem for you?” and responded to items using a 3-point scale (1 = *not a problem* to 3 = *big problem*). Sample items included “I don’t feel at home here in the United States” and “I am embarrassed by the way I speak English.”

To examine the distinction between perceived discrimination and acculturation stress, confirmatory factor analyses (CFAs) were performed using *Mplus* 5.1 (Muthén & Muthén, 2007). First, a two-factor CFA was conducted with the perceived discrimination and acculturation stress items loaded onto their corresponding factors. This two-factor CFA fit the data well: (χ^2 [34] = 58.77, p = <.05; loglikelihood = -3038.54, scaling correction factor = 2.32, k = 31; RMSEA [root mean square error of approximation] = 0.03, 90% confidence interval [CI] = .02, .05; CFI [comparative fit index] = .98; SRMR [standardized root mean square residual] = .03). Second, to examine the possibility that perceived discrimination and acculturation stress were not distinct, a one-factor CFA model was examined: (χ^2 [35] = 480.09, p = <.05; loglikelihood = -3391.36, scaling correction factor = 2.36, k = 30; RMSEA = 0.13, 90% CI = .12, .14; CFI = .72; SRMR = .15). Based on the -2 site (*Mplus*, 2009), the chi-square difference test ($\chi^2_{\text{diff}}[1] = 630.04$, p < .05) revealed that the two-factor model significantly improved the model fit, thereby providing support for the distinction between perceived discrimination and acculturation stress.

Targeted parent-child communication about alcohol—Because of time constraints and survey-length limitations imposed by the school setting and the age group, three items were taken from a nine-item scale (Miller-Day & Kam, 2010; Miller-Day & Dodd, 2004). The scale asked students, “How much do you agree with the following for *at least one* of your parents?” to which students responded using a 5-point scale (1 = *disagree a lot* and 5 = *agree a lot*). The items were: “At least one of my parents ...” “... has talked to me about how to handle offers of alcoholic drinks” and “... has warned me about the dangers of drinking alcohol.”

Parental monitoring knowledge—Three modified items from Kerr and Stattin (2000) and Stattin and Kerr (2000) were used based on a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). The scale asked students, “How often does your mom or dad ...” to which students responded to three items, “... know what you do with your free time?,” “usually know what you do after school?,” and “... know what friends you spend your free time with?”

Parental monitoring behaviors—Two modified items were used from Kerr and Stattin (2000) and Stattin and Kerr (2000), using a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). The items were: “How often does your mom or dad ask where you are going when you leave the house?” and “How often does your mom or dad tell you what time to be home?”

Parent-child closeness—Four items were used based on a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). The items were modified from the Parental Socioemotional Support for Adolescents Scale (Upchurch, Aneshensel, Sucoff, & Levy-Storms, 1999). Items included “My mom or my dad ...” to which students responded, “... really understands me” and “... lets me know she (or he) cares about me.”

Parent anti-ATOD injunctive norms—Three items from Hansen and Graham (1991) were used based on a 4-point scale (1 = *not at all angry* to 4 = *very angry*). Youth were

asked, “How angry would your parents be if they found out you:” and they responded to “...drank alcohol?” “...smoked cigarettes?” and “...smoked marijuana?”

Friend anti-ATOD injunctive norms—Students responded to three items taken from Hansen and Graham (1991). Items included, “How would your best friend react if you ...” “...got drunk?” “...smoked marijuana?” and “smoked cigarettes?” Students used a 5-point scale (1 = *very positively* to 5 = *very negatively*).

Anti-ATOD descriptive norms—Students responded to four items from Hansen and Graham (1991) using a 4-point scale (1 = *all or most* to 4 = *hardly any or none*). Sample items were: “About how many kids in your school would you guess have used alcohol, cigarettes, or marijuana at least once?” and “Now think about the friends you hang out with. How many do you think use alcohol, cigarettes, or marijuana regularly?”

Last-30-days ATOD use—Students reported the amount and frequency of using alcohol, cigarettes, and marijuana within the last 30 days from completing the survey using three items from Graham et al. (1984). Sample items were “How many drinks of alcohol have you had in the last 30 days?” and “How many cigarettes have you smoked in the last 30 days?” Students used a 7-point scale to report alcohol consumption (1 = *none* to 7 = *more than 30*), cigarette use (1 = *none* to 7 = *more than 20 cigarettes*), and marijuana hits (1 = *none* to 7 = *more than 40 hits*).

ANALYSIS SUMMARY

The hypotheses were tested in *Mplus* 5.1, using structural equation modeling (SEM). To account for the data’s missingness, listwise deletion often results in a substantial loss of power and biased parameter estimates; therefore, the full information maximum likelihood method (FIML) was used. FIML is a method conducted in a single analysis by using students’ raw data and incomplete cases to calculate the parameter estimates using the observed information matrix to calculate the standard errors (Graham, Cumsille, & Elek-Fisk, 2003).

With respect to the data distribution, perceived discrimination, acculturation stress, ATOD use, parent-based resources, and peer-based resources were skewed, ranging from -5.09 to 43.0 . The natural log transformation only reduced the skewness for acculturation stress, ATOD use, friend anti-ATOD injunctive norms, and anti-ATOD descriptive norms. Hence, the natural log transformation was used for these variables, along with the maximum likelihood estimator with robust standard errors (MLR) that is robust against nonnormally distributed data (L. K. Muthén, personal communication, May 25, 2009; Muthén & Muthén, 2007).

In addition to handling the data’s missingness and skewness, the SEM analyses controlled for prior ATOD use at Wave 3 and Wave 4 by specifying paths from these variables to last-30-days ATOD use at Wave 6. Latina/o youths’ country of origin, their mother’s and father’s country of origin, and the length of time these Latina/o youths lived in the United States were included as additional covariates. The analyses also accounted for the multilevel-structured data (i.e., students nested within schools), given that the Mexican-heritage youth in this study attended one of 23 participating schools. Intraclass correlations (ICC) for each variable determined the amount of variance that could be attributed to school-level differences. All but one of the values were less than 0.03, with one being 0.05. Multilevel SEM models often result in large and complex models, requiring a large and complicated likelihood function that often leads to convergence problems with the FIML estimation (Hox, 2002). The strongest contributing factors to this problem are an inadequate

sample size at the group level and relatively low ICC values (Hox & Maas, 2001). This study's data with only 23 schools and low ICC values reflected this situation. Consequently, the multilevel-structured data was accounted for by using TYPE = COMPLEX, which calculates the standard errors and a chi-square test while considering the non-independence of observations (Muthén & Muthén, 2007).

Finally, the data come from a culturally grounded substance use prevention program in which 23 schools were randomly assigned to three conditions: acculturation enhancement (AE), multicultural (MC), and control. Both the AE and MC conditions included lessons and videos rooted in Mexican, White, and Black cultures, promoting anti-ATOD norms, refusal efficacy, decision-making skills, and resistance skills (Gosi, Marsiglia, & Hecht, 2002). The AE and MC conditions differed, with the AE condition promoting ethnic identification, ethnic pride, cultural diversity, and bilingualism. In contrast, the MC condition focused on taking responsibility for one's decisions. The control condition used other substance-use-related programs outside this project. To address potential intervention effects, a multigroup analysis was conducted to examine whether the mediation model significantly differed based on conditions. The chi-square difference test ($\chi^2_{\text{diff}} [34] = 41.27, p = .19$) between the restricted and unrestricted models was not significant; hence, neither condition exhibited a significant effect.

RESULTS

When testing the three proposed hypotheses, a mediation model was first examined, followed by seven separate models examining each parent- and peer-based resource as a potential moderator. The following sections describe the results of the SEM models.

H1: Testing a Mediation Model

The first hypothesis posited that acculturation stress mediates the effects of perceived discrimination on ATOD use such that (1) perceived discrimination is positively associated with acculturation stress, and (2) acculturation stress is positively associated with ATOD use. To test this hypothesis, a mediation model was examined. Paths were estimated from perceived discrimination (X) to acculturation stress (M ; path a), acculturation stress to last-30-days ATOD use (Y ; path b), and perceived discrimination to last-30-days ATOD use (path c').

The mediation model (see Figure 1) fit the data well: ($\chi^2 [202] = 403.59, p < .05$; loglikelihood = -7198.35 , scaling correction factor = $2.47, k = 83$; RMSEA = 0.04 , 90% CI = $.03, .04$; CFI = $.95$; SRMR = $.05$). Perceived discrimination was positively associated with acculturation stress (standardized $\beta = .30, SE = .08, z = 3.95, p < .05$), acculturation stress was positively associated with last-30-days ATOD use (standardized $\beta = .14, SE = .04, z = 3.33, p < .05$), and perceived discrimination was not significantly associated with last-30-days ATOD use (standardized $\beta = .06, SE = .05, z = 1.18, p = .24$). In regard to testing the mediation model, the bootstrapping procedure is ideal (Preacher & Hayes, 2008); however, *Mplus* does not allow for bootstrapping with TYPE = COMPLEX (code used to control for the multilevel-structured data). Thus, PRODCLIN (MacKinnon, Fritz, Williams, & Lockwood, 2007) was used to examine the indirect effect of perceived discrimination on ATOD use through acculturation stress. PRODCLIN handles the nonnormality in the product of coefficients' distribution and computes asymmetric confidence intervals (Research in Prevention Laboratory, 2006). Based on this program, perceived discrimination had a significant indirect effect on last-30-days ATOD use through acculturation stress (95% asymmetric CI = $.01, .08$), thereby supporting the hypothesis.

The model explained 15% of the variance in acculturation stress and 48% of the variance in last-30-days ATOD use. These values correspond to a small effect size for acculturation stress and a large effect size for last-30-days ATOD use (cf. Cohen, 1988). Nevertheless, it is important to note that the covariates (e.g., prior ATOD use and acculturation variables) accounted for a substantial portion of the variances. The mediation model was reexamined excluding all covariates, and this model explained 11% of the variance in acculturation stress and 4% in last-30-days ATOD use. These values correspond to small effect sizes based on Cohen (1988).

H2: Parent–Child Communication, Relationship, and Norm Factors as Moderators

The second hypothesis postulated that parent–child communication, relationship, and norm resources would act as moderators to attenuate the effects of acculturation stress on ATOD use. Separate SEM analyses were conducted by adding each parent factor as a latent variable in the model and creating a new interaction latent variable whose indicators were the cross-products of acculturation stress and the specific parent factor. The path coefficient from the interaction latent factor to last-30-days ATOD use was then examined to determine significant moderation (for an example, see Figure 2). When examining latent interactions, *Mplus* uses an algorithm integration feature, which only yields the loglikelihood, a scaling correction factor, Akaike information criterion (AIC), Bayesian information criterion (BIC), and sample-size adjusted BIC values. These values are reported in Table 2 for the mediation-only model, as well as for each moderated mediation model. The AIC values for each moderated mediation model were lower than the mediation-only model, suggesting that these latent interaction models fit the data better. Nevertheless, because the mediation model (without latent interactions) is nested within each model that contains a latent interaction, the chi-square difference test was conducted. This test compared the mediation model without the latent interaction (nested model) to each model with a latent interaction (comparison model). Based on these tests, each latent moderated mediation model significantly improved the model fit.

A deeper inspection into the moderated mediation models revealed that none of the parent factors significantly interacted with acculturation stress to predict last-30-days ATOD use. The second hypothesis was not supported. Among the five parent-based resources, only parent–child closeness had a significant main effect on last-30-days ATOD use (unstandardized $\beta = -.05$, $SE = .02$, $z = -2.29$, $p < .05$). Regardless of acculturation stress, the more Latina/o youth experienced parent–child closeness, the less likely they were to use ATOD. Acculturation stress continued to operate as a significant mediator in each of the latent interaction models.

H3: Peer Norm Factors as Moderators

The third hypothesis proposed that peer norm factors would act as moderators to attenuate acculturation stress's effect on ATOD use. Similar to H2, separate SEM analyses were conducted to determine whether friend anti-ATOD injunctive norms and anti-ATOD descriptive norms interacted with acculturation stress to predict decreases in substance use. Again, each model included the specific peer factor as a latent variable and an interaction latent variable that was indicated by the cross-product terms of acculturation stress and the peer factor. Chi-square difference tests compared these latent moderated mediation models (comparison models) to the mediation model without latent interactions (nested model). The comparison models that included a latent interaction significantly improved the model fit (see Table 2).

Neither of these peer factors were significant moderators; thus, the third hypothesis was not supported. Yet, friend anti-ATOD injunctive norms (unstandardized $\beta = -.17$, $SE = .07$, $z =$

–2.38, $p < .05$) and anti-ATOD descriptive norms (unstandardized $\beta = -.37$, $SE = .10$, $z = -3.57$, $p < .05$) each had a significant main effect on last-30-days ATOD use. As Latina/o youth perceived a friend would react negatively if they used substances, then they were less likely to use ATOD. Similarly, these youth were less likely to use ATOD as they perceived fewer peers at school used substances. Again, acculturation stress was a significant mediator in each peer-based latent interaction model. Despite the nonsignificant interactions across all the parent and peer variables, each model with a latent interaction significantly improved the model fit. These comparison models most likely fit the data better than the nested model because each comparison model accounted for the main effect of its corresponding parent and peer variable.

DISCUSSION

Based on general strain theory, this study found that acculturation stress mediated the effect of perceived discrimination on ATOD use among Latino/o adolescents. The results did not provide support for parent and peer communication, relationship, and norm resources as significant moderators; however, parent–child closeness, friend anti-ATOD injunctive norms, and anti-ATOD descriptive norms exhibited main effects on ATOD use in their expected directions. These findings have implications for culturally grounded substance use research, where preventionists would be advised to incorporate parent(s) and peer(s) in Latina/o based programs.

Testing a Mediation Model Based on General Strain Theory

This study contributes to past research linking perceived discrimination with poor mental health (e.g., Araújo & Borrell, 2006; DeGarmo & Martinez, 2006) but goes a step further to demonstrate perceived discrimination's impact on actual health-related behaviors. In addition, this study's findings provide a theoretical contribution to GST. Proponents of this theory argue that individuals who experience a noxious stimulus (e.g., perceived discrimination) develop negative psychological reactions and are likely to cope by turning to problem behaviors (e.g., ATOD use; cf. Agnew, 1992). Latina/o youth in this study developed more acculturation stress as they experienced perceived discrimination and as a result were more likely to use substances. Thus, substance use may be a way for Latina/o youth to cope with their acculturation stress stemming from perceived discrimination. Further, this study extends past research (e.g., Pérez et al., 2008) that has examined anger as an emotional response to strain by considering another negative psychological reaction (i.e., acculturation stress) that is relevant to culturally based perceived discrimination. Finally, general strain theorists argue that coping strategies may act as a protective factor; therefore, it was hypothesized that parent- and peer-based communication, relationship, and norm resources would play this buffering role.

Parent and Peer Resources as Moderators

In this study, none of the parent or peer factors significantly interacted with acculturation stress to predict substance use. Past research (e.g., Elek et al., 2006; Miller-Day & Kam, 2010) found support for parents and peers as protective factors directly against substance use, yet no evidence was found that they mitigate the negative effects of acculturation stress on substance use. This finding is curious in light of previous research.

One explanation for the non-significant interactions may lie within the content of the parent- and peer-based measures. None of the parent or peer measures specifically referred to perceived discrimination but instead mainly focused on ATOD use. This area of research would benefit from investigating the types of supportive and comforting messages that parents and peers provide to youth who choose to disclose information about their

discrimination experiences. Parents and peers may provide suggestions for effectively dealing with Latina/o youths' perceived discrimination and acculturation stress, thereby decreasing the likelihood that they will engage in ATOD use. The non-significant interactions may be attributed to the exclusion of measures capturing discussions specifically regarding perceived discrimination.

As a coping strategy, Latina/o youth also may benefit from the ethnic/racial socialization that parents and peers provide for Latina/o youth over time. Many minority parents protect their offspring from perceived discrimination by directly addressing it early in life through ethnic/racial socialization processes (Gibbons et al., 2004). Ethnic socialization refers to parents and peers informing and promoting ethnic identification, and racial socialization refers to parents or peers informing and preparing youth about issues regarding race and racism, which may include teaching these youth how to interact with others who are within and outside of their ethnic/racial group (Barr & Neville, 2008). Among African American adolescents, Neblett et al. (2008) found that high positive racial socialization messages buffered against perceived discrimination's effects on stress and problem behaviors. The Neblett et al. study did not consider peer socialization efforts or Mexican-heritage youth; however, their study provided evidence for racial socialization as a potential protective factor against perceived discrimination. Research might benefit from first describing ethnic/racial socialization messages that Latina/o youth receive from their parents and peers and then examining whether they play a buffering role.

An additional explanation for the nonsignificant parent and peer interactions is rooted in theoretical postulations of general strain theorists when explaining possible coping strategies. In addition to parent and peer networks, Agnew (1992) suggested that youth may use cognitive adjustments such as convincing themselves that the acculturation stress from perceived discrimination is not significant (i.e., that it is bearable) or that they deserve to be discriminated against. Further, youth may alter their goals, such as wanting to be accepted by certain peers, may lower their standards, or may compare themselves to others with worse treatment. Another example may be developing a strong sense of ethnic identification. In particular, ethnic identification refers to how individuals relate to their own ethnic group relative to other ethnic groups and the extent to which they feel connected with their ethnic group (Donthu & Cherian, 1992). Latina/o youth who experience perceived discrimination against their ethnic group may be more resilient to such acts when having a strong sense of pride in their own ethnic heritage. Such cognitive adjustments may be resources that prevention researchers may promote in their programs.

Finally, a methodological explanation for the nonsignificant interactions may lie in the lack of variation in the data. This study's Latina/o sample reported low mean levels of perceived discrimination, acculturation stress, and last-30-days ATOD use. In a Latina/o sample reporting greater variation in these measures, it is possible that the parent and peer factors would significantly interact with acculturation stress to predict ATOD use. The low levels of perceived discrimination and acculturation stress are likely a result of Latina/o youth comprising the majority at the 23 schools, forming 80% of the total sample at Wave 4. Thus, culturally based perceived discrimination and resulting acculturation stress are less likely to be experienced when these youth form the majority at school. A sample of older Latina/o youth in a setting where they are not the majority should be considered to determine whether parent and peer relationship factors interact with acculturation stress to decrease ATOD use.

The low levels of ATOD use may be a result of this sample's age and may also account for the small effect sizes. In particular, studies demonstrate that onset of ATOD use generally occurs between the grades of seventh through 10th grades (Johnston et al., 2007). Thus, the transition from middle school to high school represents an important stage in adolescent

development. The current sample included reports of past-30-day use among Latina/o youth who ranged from seventh to eighth grades. Future studies that follow such youth into high school and that include measures of lifetime use may be warranted. Despite this study's small effect sizes, they are similar to effects found in past studies on adolescent substance use (Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2005; Elek et al. 2006). Moreover, in situations where the research involves great consequences such as early substance use among youth, small effect sizes should not be discounted (Prentice & Miller, 1992).

Practical Implications

Despite the nonsignificant interactions, parent–child closeness, friend anti-ATOD injunctive norms, and anti-ATOD descriptive norms were negatively associated with ATOD use. Among the five parent-based resources, only parent–child closeness had a significant main effect on ATOD use, whereas both peer-based resources had a significant main effect. This finding may suggest that familial and peer networks are not equal in their degree of influence.

Thornberry (1987) developed interactional theory, in which he argued that the parents' influence decreases as youth transition into middle adolescence, when school and peers become more salient in their lives. A past study revealed that parental attachment such as family involvement and perceived closeness exhibited strong effects on adolescents' drug use during early and middle adolescence (Jang, 2002). This result may explain why the current study found a significant negative association between parent–child closeness and ATOD use for Latina/o middle school students, but not for the other parent-based resources. Perhaps parent–child closeness and peer-related norms are more influential during middle adolescence and should be emphasized in culturally grounded substance use prevention programs. Their influence, however, may change over time, and other resources may need more promoting to meet these Latina/o adolescents' developmental needs.

Given that Latina/o adolescents are at risk for engaging in substance use when they experience perceived discrimination, efforts should be made to prevent and decrease perceived discrimination and acculturation stress. First, promoting an appreciation for cultural diversity throughout the community, neighborhoods, and schools would help reduce perceived discrimination and acculturation stress. Additional efforts should be made to investigate effective coping strategies that Latina/o adolescents can use. Prevention programs should incorporate parents and peers to show them how to handle their own experiences with perceived discrimination and acculturation stress and how to help others (e.g., their offspring or peers).

Despite the low levels of perceived discrimination, acculturation stress, and ATOD use, these Latina/o adolescents should not be ignored. In a more heterogeneous setting where Latina/o adolescents are the minority, it is possible that perceived discrimination would exhibit an even stronger effect on ATOD use. Nevertheless, in homogeneous schools, within-ethnic discrimination may occur. Discrimination transpires for a number of reasons, such as low socioeconomic status (SES), generation status, documented versus undocumented immigration, skin tone, and linguistic skills even within a group. This study's results show the harmful effect of perceived discrimination even among a sample of Latina/o youth in a homogeneous school setting.

Limitations and Future Research

This study extends the literature on parent and peer factors as buffers against the effects of acculturation stress on ATOD use among Latina/o youth; however, several limitations exist. First, parents' and peers' perspectives were not obtained in this study. Based on a systems

theory perspective (e.g., Yerby, 1995), family members and peers influence each other's psychological and behavioral experiences. Gibbons et al. (2004) found that parents' reports of perceived discrimination were positively associated with their children's reports of perceived discrimination. It is also possible that peers' perceived discrimination predicts youth's perceived discrimination and their subsequent reactions to this negative experience. Further investigation can determine how parents-to-offspring and peers-to-peers influence each other's perceived discrimination experiences and how they cope with such experiences.

In addition, it may be that this study did not adequately operationalize peer influences, nor did it fully capture anti-ATOD descriptive norms. Only friend anti-ATOD injunctive norms and anti-ATOD descriptive norms were measured to evaluate peers as a potential coping resource. Future research would benefit from including peer-to-peer closeness or peer-to-peer conversations about perceived discrimination and alcohol and other substances to determine whether peers provide additional types of resources that may interact with acculturation stress to predict ATOD use. In addition, this study would benefit from an assessment of parents' substance use behaviors in the form of parent descriptive norms. Strained Latina/o youth may consider substance use as an easy way to cope with their acculturation stress from perceived discrimination if a parent partakes in such behaviors.

Finally, this study was unable to examine cultural differences regarding the hypotheses. The influence of parents and peers on Latina/o youth are likely to differ based on variations in cultural backgrounds. Yet Mexican and Mexican American youth comprised 93% of the Latina/o sample, and Latinas/os comprised 80% of the total sample. A lack of variation prevented this study from examining whether associations operated uniquely for Latina/o youth.

CONCLUDING REMARKS

This study's application of GST sheds light on the negative effects of perceived discrimination on Latina/o youths' psychological health and health-related behaviors. Given the prevalence of perceived discrimination among U.S. Latinas/os, this finding should inspire researchers and practitioners to investigate and facilitate the development of coping mechanisms that promote healthy ways of managing acculturation stress from perceived discrimination. The failure of this study to find significant interactions among the included parent and peer factors suggests a more powerful model for social solutions should be developed. Perceived discrimination can be reduced, but it would be naive to believe this phenomenon can be completely eliminated, thus emphasizing the urgency in establishing healthy coping behaviors.

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FIGURE 1.

A mediation model of perceived discrimination's indirect effect on ATOD use.

Note. To control for acculturation variables, paths were examined from these variables to perceived discrimination, acculturation stress, and last-30-days ATOD use. Prior ATOD use at Wave 3 and Wave 4 also were controlled for by examining paths from these variables to last-30-days ATOD use at Wave 6. These covariates contributed to the variance explained by the model. The multilevel-structured data was controlled for when testing this model (χ^2 [202] = 403.59, $p = < .05$; RMSEA = 0.04, 90% CI = .03, .04; CFI = .95; SRMR = .05). Path coefficients are completely standardized. All significant ($p < .05$) paths are highlighted by boldface and marked by asterisks.

FIGURE 2.

An example of a latent moderated mediation model with targeted parent–child communication as a potential moderator.

Note: DISC = perceived discrimination, ASTRESS = acculturation stress, ATOD6 = alcohol, tobacco, and other drug use at wave 6, TALC = targeted parent–child communication about alcohol, ATOD3 = alcohol, tobacco, and other drug use at Wave 3, ATOD4 = alcohol, tobacco, and other drug use at Wave 4.

Descriptive Statistics, Bivariate Correlations, and Reliabilities for Perceived Discrimination, Acculturation Stress, ATOD Use, Parent Factors, and Peer Factors

TABLE 1

Variable	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. DISC	1.50	.65	.89									
2. ASTRE	1.18	.34	.29**	.80								
3. ATOD	1.55	1.0	.11*	.15**	.73							
4. TALC	3.58	1.1	-.18**	-.13**	-.15**	.90						
5. MONK	3.19	.83	-.12**	-.10*	-.21**	.30**	.86					
6. MONB	3.33	.82	-.10*	-.12**	-.15**	.26**	.63**	.71				
7. CLOSE	3.25	.71	-.14**	-.12**	-.12*	.36**	.45**	.31**	.88			
8. PNORM	3.61	.69	-.13**	-.11*	-.19**	.22**	.26**	.22**	.26**	.83		
9. FNORM	3.89	1.2	-.04	-.12**	-.32**	.24**	.28**	.19**	.16**	.28**	.90	
10. DESC	2.99	.78	-.02	-.14**	-.39**	.19**	.25**	.19**	.12**	.17**	.49**	.84

Note. Total $n = 728$,

$p < .01$,

*

$p < .05$ (two-tailed). Cronbach's alpha coefficients are provided in the diagonal. DISC = perceived discrimination (1 = *strongly disagree* to 4 = *strongly agree*), ASTRE = acculturation stress (1 = *not a problem* to 3 = *big problem*), ATOD = alcohol, tobacco, and other drug use (1 = *disagree a lot* to 5 = *agree a lot*), TALC = targeted parent-child communication about alcohol, MONK = parental monitoring knowledge (1 = *strongly disagree* to 4 = *strongly agree*), MONB = parental monitoring behaviors (1 = *strongly disagree* to 4 = *strongly agree*), CLOSE = parent-child closeness (1 = *strongly disagree* to 4 = *strongly agree*), PNORM = parent anti-ATOD injunctive norms (1 = *not at all angry* to 4 = *very angry*), FNORM = friend anti-ATOD injunctive norms (1 = *very positively* to 5 = *very negatively*), DESC = anti-ATOD peer descriptive norms (1 = *all or most* to 4 = *hardly any or none*).

TABLE 2
Fit Statistics and Chi-Square Differences for the Mediation Model and the Seven Moderated Mediation Models

Moderator	Loglikelihood	Scaling Correction Factor	AIC	BIC	Adjusted BIC	Number of Parameters	χ^2_{diff} p-value
Mediation model	-7198.35	2.47	14,562.70	14,943.69	14,680.14	83	
Targeted parent-child communication	-6657.74	2.52	13,493.49	13,896.60	13,614.02	89	$\chi^2_{\text{diff}}(6) = 325.19, p < .05$
Parental monitoring knowledge	-6446.90	2.39	13,071.79	13,474.91	13,192.32	89	$\chi^2_{\text{diff}}(6) = 1132.15, p < .05$
Parental monitoring behaviors	-5921.57	2.42	12,015.13	12,404.66	12,131.60	86	$\chi^2_{\text{diff}}(3) = 2025.03, p < .05$
Parent-child closeness	-6592.50	2.47	13,368.99	13,785.70	13,493.59	92	$\chi^2_{\text{diff}}(9) = 485.52, p < .05$
Parent anti-ATOD injunctive norms	-6138.06	2.50	12,454.11	12,857.23	12,574.64	89	$\chi^2_{\text{diff}}(6) = 710.65, p < .05$
Friend anti-ATOD injunctive norms	-4997.69	2.71	10,173.39	10,576.51	10,293.92	89	$\chi^2_{\text{diff}}(6) = 725.15, p < .05$
Anti-ATOD peer descriptive norms	-5267.15	2.51	10,718.29	11,135.00	10,842.88	92	$\chi^2_{\text{diff}}(9) = 1325.10, p < .05$

Note. AIC = Akaike information criterion, BIC = Bayesian information criterion.