A Longitudinal Analysis of Stressful Life Events, Smoking Behaviors, and Gender Differences in a Multicultural Sample of Adolescents

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Many studies have addressed the associations between stressful life events and adolescent smoking. Few studies, however, have examined gender differences, specifically with multicultural samples. This longitudinal study examines the relationship between 6 stress subscales and smoking behaviors 716 multicultural U.S. adolescents living in the greater Los Angeles area in 2000–2001. At baseline the ethnic break-down of the sample was 63% Latino and 26% Asian/PI and 70% were 11 years of age. Negative personal events were associated with lifetime smoking and negative school events were associated with intentions to smoke. Stratification of the sample by gender indicated that gender confounded the relationship between negative personal stress and lifetime smoking and negative school stress, positive personal stress and intentions to smoke. Two significant interactions were found. Findings indicate there are differential effects of stressful events between genders which may lead to smoking experimentation or intentions to smoke. Implications and limitations are discussed.

Keywords Stressful life events; adolescents; smoking; moderation; gender differences; adolescent smoking; acculturative stress

Many studies have shown that habits acquired during adolescence are likely to continue through adulthood (Kelder, Perry, Klepp, and Lytle, 1994; Malina, 2001, 2002; Trost, Owen, Bauman, Sallis, and Brown, 2002). Smoking is one such behavior (Breslau and Peterson, 1996; Chassin, Presson, Sherman, and Edwards, 1990; Coombs, Li, and Kozlowski, 1992; Flay, 1993; Tailoi and Wynder, 1991). Worldwide, smoking is the second major cause of death and the fourth most common risk factor for disease (World Health Organization: Tobacco Free Initiative, 2002). In a large worldwide school study the lifetime smoking rate of...
students ages 13–15 is 33% (The Global Youth Tobacco Survey Collaborative Group, 2002). Forty-nine percent of the students who responded to this survey from the United States reported ever smoking a cigarette, and 18% report being a current smoker, that is, in the past month (The Global Youth Tobacco Survey Collaborative Group, 2002). Rates of smoking also differ among U.S. adolescents by gender, race/ethnicity, and acculturation level (Booker, Gallaher, Unger, Ritt-Olson, and Johnson, 2004; CDC, 2001b; Johnston, O’Malley, and Bachman, 2001; Unger et al., 2004; Unger, Palmer, Dent, Rohrbach, and Johnson, 2000).

### Stress and Adolescent Smoking

Adolescence is a period of great change, including an increase in the perception of the number and severity of stressors that must be dealt with on a daily basis. From Selye and others’ early work on the physiological impact of stress (Selye, 1955; Selye and Fortier, 1950) to Lazarus’ work on stressful life events (Folkman, 1984; Lazarus, 1966, 1974, 1984; Lazarus and Folkman, 1984) to Cohen’s work on perceived stress (Cohen, Kamarck, and Mermelstein, 1983; Cohen and Lichtenstein, 1990; Cohen, Tyrrell, and Smith, 1993; Cohen and Williamson, 1988; Cohen and Wills, 1985), the current literature on stress is vast. Evidence of a relationship between stress and adolescent smoking has also been shown (Booker, Gallaher, Unger, Ritt-Olson, and Johnson, 2004; Byrne, Byrne, and Reinhart, 1995; Byrne and Mazanov, 1999; Byrne and Mazanov, 2003; Gong, Li, Chen, and Johnson, 2004; Li et al., 2000; Unger et al., 2001; Vaccaro and Wills, 1998; Wills, 1986; Wills and Filer, 1996; Wills, Sandy, and Yaeger, 2002). In a 12-month follow-up study, stressful life events were associated with changes in smoking behaviors in females but not in males (Byrne and Mazanov, 2003). Stressful events from school, family, and peers have also been associated with smoking in adolescents. Byrne and Mazanov (1999) found that male and female adolescents differed slightly in the sources of stress that were associated with smoking. Educational performance and future uncertainty were significantly associated with smoking among females but not among males (Byrne and Mazanov, 1999). School attendance, family conflict, parental control, and perceived educational irrelevance were associated with smoking for both genders (Byrne and Mazanov, 1999). Studies have also shown that females report experiencing more stress than males (Burke and Weir, 1978; Byrne and Mazanov, 1999; Byrne and Mazanov, 2003; Colarossi, 2001; Colarossi and Eccles, 2000; Compas, Davis, and Forsythe, 1985; Munsch and Wampler, 1993; Orton, 1982; Ystgaard, 1997).

Few studies have addressed whether the association between stressful life events and smoking differs by ethnicity/race or generation status. Vaccaro and Wills (1998) observed that major life events were predictive of smoking among African American, Hispanic, and White adolescents. However, those events appeared to have stronger predictive value for Hispanic and White adolescents (Vaccaro and Wills). A cross-sectional study by Booker, Gallaher, Unger, Ritt-Olson, and Johnson (2004) found that negative peer-related events were associated with smoking behaviors in Asians/PIs, Latinos, and children with immigrant parents. Among children whose parents were born in the United States, negative peer- and positive family-related events were associated with intentions to smoke (Booker, Unger, Ritt-Olson, and Johnson).

There are many other sources of stress that a person can experience other than stressful life events from family, school, peers, and so forth. The stress one experiences due to the process of acculturation is one example. As adolescents acculturate into a new society, they may have to make decisions regarding the role or importance of differing cultural values and practices (Padilla, 1980; Williams and Berry, 1991). They may also have to act as “experts” on the new culture for other family members whose level of acculturation is not
as high or those who have not acculturated as quickly (Mead, 1955; Portes and Rumbaut, 2001). The result of being forced to explain some of these cultural nuances to one’s parents may create additional stress to the adolescent (Vega, 1992). Acculturative stress can also be the result of discrimination by others as well as the inability to reconcile the cultural values or beliefs of the differing cultures (Vega). Understanding how acculturative stress may influence smoking behaviors among adolescents is becoming increasingly important as the United States and the world become more diverse and cultures interact more intimately.

Studies have addressed some of the stressors associated with acculturation, such as language mastery, translating important information to parents, feeling unaccepted because of ethnic group affiliation, immigration status, cultural practices, and family conflicts attributed to different acculturation levels between adolescents and parents (Berry, 1998; Born, 1970; Gil, Vega, and Dimas, 1994; Hovey, 1998; Sanchez and Fernandez, 1993; Ward, 1997). In a search of the literature no studies have been published that have addressed both stressful life events in adolescents and acculturative stress. It must also be noted that many of the studies that have looked at acculturation and acculturative stress, in the United States, have mainly focused on Hispanics and Latinos. Although this is a very important group, other groups must not be neglected, as what is learned from these studies may not be appropriate or valid for all groups. Other stress inducing topics that need to be incorporated into future stress instruments include economic stress, racial/discrimination stressors, and stress surrounding violence, both as a victim and a perpetrator.

**Gender and Adolescent Smoking**

Up until the mid- to late 1970s, the current smoking rate among males (ages 18 and older) in the United States was much higher than the rate among females (ages 18 and older; National Center for Health Statistics, 1975, 1978; US DHHS, 1999). Beginning in the early 1980s the rate of smoking among females increased (US DHHS, 1999). Both lifetime and current smoking among adolescents has been low in the United States; however, during the mid- to late 1990s there was an increase in current smoking among high school senior females. The increase in smoking among females, adults, and adolescents reflects a change in how women view themselves. Until the end of World War II smoking was seen as a male activity and females were discouraged from smoking. However, with the increase of women into the workplace during and after the war, the subsequent increase in perceived freedom, increased advertisement to females and acceptance, female smoking increased. As adult female smoking has increased, adolescent females’ smoking rates has increased as well. In the United States, over the past decade or so, the female smoking rates have reached equal levels with males (Bloch et al., 2005; Coogan et al., 1998; Johnson and Gilbert, 1991; Stanton, Oei, and Silva, 1994). As of 2003, both male and female adolescents in the United States had lifetime smoking rates of 58% and current smoking rates of 22% (CDC, 2004).

This pattern of increased freedom among women and the resulting increase in smoking is observed in many different countries and cultures. As the population of the United States continues to diversify, the smoking rates of the countries that contribute to the U.S. population should be taken into account. Many of the people who come to the United States are from developing countries which still hold closely to traditional gender roles. These roles may have a direct impact on the smoking rates of males and females. For example, in China the rates of smoking in adolescent males ranges from 15% to 48% compared to 1% to 13% for females (Wang, Yu, Zhu, Liu, and He, 1994; Yang, Fan, Tan, and et al., 1999; Yang et al., 2004; Zhang, Wang, Zhao, and Vartiainen, 2000). The rates of current smoking also differ from country to country in South and Central America, from a low of
6% in Venezuela to a high of 36% in Coquimbo, Chile, among males (The Global Youth Tobacco Survey Collaborative Group, 2003). Female current smoking rates range from 8% in Venezuela to a high of 44% in Santiago, Chile (The Global Youth Tobacco Survey Collaborative Group, 2003). In Mexico, where a majority of Hispanics immigrate to the United States from, the current smoking rate among adolescents is 19% and the lifetime smoking rate is 52% (The Global Youth Tobacco Survey Collaborative Group). The current smoking rate for adolescent males in Mexico is 23% where the rate among females is 15% (The Global Youth Tobacco Survey Collaborative Group). These differences in smoking rates may reflect the ideas that smoking among females, both adolescents and adults, is looked down on, while smoking among male is accepted.

Although evidence of a relationship between stressful life events and smoking in adolescents is strong, more needs to be done to explore possible gender and racial/ethnic differences that may exist in stressful life event appraisal and how that may influence an adolescent’s decision to smoke. This report is a follow-up to a cross-sectional study of the association between stressful life events and adolescent smoking. This study addresses this same relationship longitudinally in a multicultural sample of adolescents in the United States. This study examines acculturative stress as another potential category of stressor that is associated with smoking behaviors. Based on the previous study, the hypotheses of this study were:

1. Based on previous studies, baseline negative peer-related and negative school-related events will be associated with smoking behaviors at follow-up.
2. Acculturative stress will be positively associated with smoking behaviors.
3. Negative school-related events will be positively associated with smoking behaviors in females.
4. Negative peer-related events will be positively associated with smoking behaviors in males.
5. Negative peer-related events will be positively associated with smoking intentions in Latinos and Asian/PI but not in White adolescents.

Methods

Overview

The data described in this article are from a longitudinal school-based experimental trial of smoking prevention strategies in a multicultural, urban population of adolescents in California. Because the study focuses on the two largest and most quickly growing immigrant ethnic groups to the United States (Hispanics and Asians), the sample selection procedure was designed to select schools with large proportions of Hispanic and Asian students. Data from the California Board of Education and the Roman Catholic Archdiocese were used to identify and classify schools as Asian, Latino, or Multicultural. Schools not classified as Asian, Latino, or Multicultural were either dropped from the trial or continued to work with us in related projects (e.g., pilot testing). To facilitate longitudinal follow-up of students, the sample was limited to middle schools that included Grades 6, 7, and 8 (i.e., school systems were excluded if their students matriculate from elementary school to junior high school between Grades 6 and 7). The final school sample consisted of 24 parochial and public middle schools, of which nine met the criteria for Hispanic composition, six met the criteria for Asian composition, and nine met the criteria for Multicultural. More detailed descriptions of the prevention trial, school selection, and recruitment and study procedures have been explained in detail elsewhere (Booker, Gallaher, Unger, Ritt-Olson, and Johnson,
As part of this trial, schools were randomly assigned to receive one of three smoking prevention programs. The students assigned to receive a traditional smoking prevention program were used as the sample. The stress survey was given only to students in this treatment group. Because all students in this group received the same smoking prevention intervention, the analyses here are not confounded by program effects. The intervention that these students received, CHIPS (Choosing Health Influences for a Powerful Self), is similar to the evidence-based social influences-based smoking prevention programs that are currently in use in many schools.

**Student Recruitment.** All sixth-grade students in the participating schools were invited to participate in the study. The study includes two components with different informed consent requirements according to California law and the university’s Institutional Review Board. An introduction to the study was given to the student in their classrooms by trained health educators and data collectors. Students were also told that their contribution to this study would result in learning more about substance use in adolescents and some of the risk factors that may influence their decisions to participate in risky behaviors and that their participation may help to create better intervention programs and stop other adolescents from participating in those behaviors in the future. The students also received direct benefits in the form of increased knowledge regarding smoking behaviors. They were given a smoking prevention program and so they may have also benefited from a reduction or prevention of smoking. Consent forms and study information sheets, developed by the health educators and study investigators, were sent home to the parents/guardians of all sixth-grade students in the school. If a parent actively refused the child’s participation (i.e., checked “no” on the form and returned it to the school), the child was not eligible to participate in any part of the survey. If a parent provided active written consent for the complete survey (i.e., checked “yes” on the form and returned it to the school), the child was invited to participate in the complete study. If a parent did not return the consent form at all, the child was invited to participate only in the portion of the study that did not require active written parental consent (e.g., nonsensitive survey questions that were part of the usual curriculum evaluation, which in California requires only implied parental consent). All procedures, forms, surveys, and information sheets were approved by the University of Southern California IRB.

**Sample.** The data used for this study are from the 1-year follow-up. At baseline there were 1,074 sixth-grade respondents in eight middle schools. In the 1-year follow-up there were 728 seventh-grade students with both baseline and follow-up data. Written active parental consent and student assent were obtained at baseline of the study. Consent rates are described elsewhere (Unger et al., 2004). At baseline the ethnic breakdown of the sample was 63% Latino and 26% Asian/PI and 70% were 11 years of age. The Asian/PI breakdown is 16% Chinese, 4% Filipino, 4% Vietnamese, 2% Korean, and 1% Pacific Islander (Hawaiian, Tongan, Samoan, and/or Guamanian).

**Measures.** A 160-item paper-and-pencil survey was administered, at baseline and 1-year follow-up, during a single class period, which provided demographic, ethnic, generational, as well as psychosocial data.

**Smoking.** Lifetime smoking was measured by asking the students “Have you ever tried cigarette smoking, even a few puffs?” The response was dichotomized yes/no. One year intention to smoke was measured by asking the students “At any time in the next year (12 months), do you think you will smoke a cigarette?” Responses ranged from 1 = Yes, definitely to 4 = No, definitely not. Students who answered anything other than “No,
definitely not" were classified as having intentions or being susceptible to smoking, as recommended by Pierce, Choi, Gilpin, Farkas, and Merritt (1996).

**Generational Status.** Generational status was developed from a composite of three items. Parental country of birth was determined through two questions: “Where was your mother born?” and “Where was your father born?” The parent questions had three possible answers: “United States,” “Other,” and “I don’t know.” Students were also asked to identify where they were born, “Where were you born?” This question had two answers: “United States” and “Other.” For all questions, if other was checked students could write in the country of birth. The parent questions were then combined to create a dichotomous variable, parents born in the United States/not born in the United States. The dichotomous parent variable was then combined with adolescent variable to create the generation status variable. There are three levels of generation status “Parent and child both born in the US,” “Parent not born in the US, child born in the US,” and “Neither child or parent born in the US.”

**Socioeconomic Status.** Socioeconomic status (SES) was a ratio of the number of rooms to people living in the student’s home. Two questions were adapted from the American Household Survey in order to produce this ratio (Cook, Morris, and Winter, 1988; Myers and Brown). The two questions were “How many people live in the home where you spend most of your time (including you)?” (students chose from among six response options ranging from “2 people” to “7 or more people”) and “How many rooms does your house or apartment have? (Don’t count the kitchen or bathroom)” (students chose from among seven response options ranging from “1 room” to “7 or more rooms”). For each student, a proxy SES score was calculated by dividing the number of rooms by the number of people living in the household.

**Peer Smoking.** Peer smoking was assessed with one question: “How many of your friends have ever tried smoking a cigarette?” Four response options were given ranging from “None” to “All.”

**Acculturative Stress.** Acculturative stress is a composite score from three items: “Do you ever feel uncomfortable when you have to choose between doing things like Americans or non-Americans?” “Do you ever have problems with your family because you like to do things the American way?” and “Do you ever get upset with your parents because they don’t understand the American lifestyle?” All three questions were answered on a 4-point Likert scale with responses ranging from 1 = Yes to 4 = No. The scale had a Cronbach's alpha of 0.56.

**Stressful Life Events.** Stressful life events were assessed through a 65-item checklist. Details of the development of the checklist can be found elsewhere (Booker, Gallaher, Unger, Ritt-Olson, and Johnson, 2004). Students were asked to indicate which of the stressors they had experienced in the past 6 months. The 65 items were then placed into one of six subscales. These subscales—negative school, negative family, positive family, negative peer, negative personal, and positive personal—covered four domains and included both positive and negative stressors. The number of items per scale ranged from 2 (positive family) to 19 (negative family). A full list of items and scales has been provided by Booker, Gallaher, Unger, Ritt-Olson, and Johnson (2004). The following are examples of the items included in each scale. The negative school-related scale consisted of seven items including “argued with a teacher” and “had to study for a big test.” “Got into a fight,” “felt pressured to do things I didn’t want,” and “friend moved” are a few examples of the 13-item that make up
Data Analysis. Frequencies and chi-squares were used to analyze descriptive statistics. Due to the sampling methods employed for the study, use of schools, individual students are nested within schools. Individual-level regression models are not able to account for intersubject associations (i.e., the similarity of students within the same school) resulting in artificially small confidence intervals (Murray, Moskowitz, and Dent, 1996). Intraclass correlations (ICC) can be calculated to determine the proportion of the variance that is due to being a member of the group, in this case school. In the substance use literature an ICC of 0.02 is typical among adolescents within schools (Murray and Hannan, 1990; Murray, Moskowitz, and Dent; Murray and Short, 1997). The ICCs for this sample were 0.019 for lifetime smoking and 0.027 for smoking intentions. Multilevel regression models were used to control for this interclass correlation and decrease type 1 error. Multilevel logistic regression models, with school included as a random effect variable, were conducted for those students with complete data at 1-year follow-up. The dependant variables were lifetime smoking and smoking intention both measured at 1-year follow-up. The independent variables were stressful life event subscales and acculturative stress also measured at baseline. Covariates included age, gender, SES, friend’s smoking, parental smoking, lifetime smoking, and smoking intentions all measured at baseline. Due to small numbers of smokers at follow-up stratification by ethnicity or generation status was not possible therefore they were included as covariates.

Moderation Analyses. Gender was tested as a potential moderator of the relationship among stressful events, acculturative stress, and smoking. Moderation testing conducted according the methods outlined by Baron and Kenny (1986) and by Frazier, Tix, and Barron (2004). Interaction terms including gender, each stress scale and acculturative stress were included in to the model. Significant interactions were graphed and simple slope calculations were conducted. Simple slope calculations provide information similar to that given by simple effect in ANOVA calculations (Aiken and West, 1991). Simple slopes provide the main effect of a factor at a given level of a second factor rather than being collapsed over all levels of a factor as is done with main effects (Aiken and West).

Attrition Analyses. To evaluate the representativeness of the follow-up sample, t-tests were used to compare those students with complete data at follow-up with those students with missing data at follow-up on demographic characteristics, smoking behaviors and stress scores. All analyses were conducted with SAS System 9.1 for Windows (SAS Institute, Cary, NC).

Results

Demographic Characteristics

Demographic characteristics of the analysis sample are shown in Table 1. There were significantly more females ($n = 386$) than males ($n = 320$) in the sample, $p < .05$. The majority of the sample was Latino (55%), the next largest group was Asian/PI at 23%. Whites and
Table 1
Description of sample characteristics

<table>
<thead>
<tr>
<th></th>
<th>Overall (n = 716)</th>
<th>Females (n = 386)</th>
<th>Males (n = 320)</th>
<th>p-valuea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, n (%)</td>
<td></td>
<td></td>
<td></td>
<td>0.61</td>
</tr>
<tr>
<td>10 Years old</td>
<td>6 (1)</td>
<td>3 (1)</td>
<td>3 (1)</td>
<td></td>
</tr>
<tr>
<td>11 Years old</td>
<td>490 (69)</td>
<td>274 (71)</td>
<td>213 (67)</td>
<td></td>
</tr>
<tr>
<td>12 Years old</td>
<td>205 (29)</td>
<td>103 (27)</td>
<td>98 (31)</td>
<td></td>
</tr>
<tr>
<td>13+ Years old</td>
<td>12 (2)</td>
<td>6 (1)</td>
<td>6 (2)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity, n (%)</td>
<td></td>
<td></td>
<td></td>
<td>0.45</td>
</tr>
<tr>
<td>Asian</td>
<td>164 (23)</td>
<td>81 (21)</td>
<td>82 (26)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>16 (2)</td>
<td>9 (2)</td>
<td>7 (2)</td>
<td></td>
</tr>
<tr>
<td>Latino</td>
<td>393 (55)</td>
<td>222 (58)</td>
<td>166 (52)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>71 (10)</td>
<td>39 (10)</td>
<td>29 (9)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>72 (10)</td>
<td>35 (9)</td>
<td>36 (11)</td>
<td></td>
</tr>
<tr>
<td>Generation status, n (%)</td>
<td></td>
<td></td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td>Immigrant child</td>
<td>143 (21)</td>
<td>77 (21)</td>
<td>64 (21)</td>
<td></td>
</tr>
<tr>
<td>Immigrant parents</td>
<td>410 (59)</td>
<td>235 (63)</td>
<td>172 (55)</td>
<td></td>
</tr>
<tr>
<td>Parent(s) and child US born</td>
<td>139 (20)</td>
<td>60 (16)</td>
<td>75 (24)</td>
<td></td>
</tr>
<tr>
<td>Smoking n, (%)</td>
<td></td>
<td></td>
<td></td>
<td>0.02</td>
</tr>
<tr>
<td>Baseline lifetime smoking</td>
<td>57 (8)</td>
<td>22 (6)</td>
<td>34 (11)</td>
<td></td>
</tr>
<tr>
<td>Baseline intention to smoke in the</td>
<td>84 (12)</td>
<td>34 (9)</td>
<td>48 (15)</td>
<td>0.01</td>
</tr>
<tr>
<td>next 12 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Year follow-up lifetime smoking</td>
<td>112 (16)</td>
<td>45 (12)</td>
<td>66 (21)</td>
<td>0.001</td>
</tr>
<tr>
<td>1-Year follow-up intention to smoke</td>
<td>110 (16)</td>
<td>51 (13)</td>
<td>58 (18)</td>
<td>0.07</td>
</tr>
<tr>
<td>in the next 12 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress scales, mean (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative school-related events</td>
<td>2.86 (1.68)</td>
<td>2.73 (1.55)</td>
<td>3.20 (1.77)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Negative family-related events</td>
<td>5.26 (3.56)</td>
<td>5.75 (3.45)</td>
<td>5.47 (4.01)</td>
<td>0.21</td>
</tr>
<tr>
<td>Positive family-related events</td>
<td>0.42 (0.58)</td>
<td>0.49 (0.58)</td>
<td>0.44 (0.57)</td>
<td>0.17</td>
</tr>
<tr>
<td>Negative peer-related events</td>
<td>4.01 (3.05)</td>
<td>4.27 (2.96)</td>
<td>4.38 (3.16)</td>
<td>0.81</td>
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<tr>
<td>Negative personal-related events</td>
<td>4.75 (2.80)</td>
<td>4.72 (2.53)</td>
<td>5.10 (3.09)</td>
<td>0.003</td>
</tr>
<tr>
<td>Positive personal-related events</td>
<td>0.94 (0.79)</td>
<td>1.02 (0.75)</td>
<td>1.03 (0.84)</td>
<td>0.89</td>
</tr>
<tr>
<td>Acculturative stress</td>
<td>9.68 (2.38)</td>
<td>9.71 (2.35)</td>
<td>9.66 (2.42)</td>
<td>0.42</td>
</tr>
<tr>
<td>SES, mean (SD)</td>
<td>1.41 (0.95)</td>
<td>1.44 (0.93)</td>
<td>1.38 (0.98)</td>
<td>0.78</td>
</tr>
<tr>
<td>Friends ever smoking, mean (SD)</td>
<td>1.25 (0.54)</td>
<td>1.16 (0.42)</td>
<td>1.35 (0.62)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Parent (Guardian) smoking behavior,</td>
<td>1.38 (0.63)</td>
<td>1.35 (0.61)</td>
<td>1.43 (0.67)</td>
<td>0.12</td>
</tr>
<tr>
<td>mean (SD)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*aSmoking comparisons utilize chi-square analyses, all other analyses utilize independent t-tests.

*Unless specified variables were measured at baseline.

Students who were of other ethnicity or reported being of one or more ethnic group comprised 10% of the sample each. Blacks were the smallest group at 2%. Fifty-nine percent of the sample was second generation. Males had higher means of negative school- and negative personal-related events than females, \( p < .05 \). All other subscales were not significantly different between males and females. Males also had a higher mean of friends who had ever tried smoking than females, \( p < .05 \). Fifteen percent of the sample reported having ever
### Table 2
Attrition analyses

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Follow-up (n = 716)</th>
<th>Non-evaluable (n = 358)</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD)</td>
<td>11.32 (0.53)</td>
<td>11.31 (0.53)</td>
<td>0.89</td>
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<tr>
<td>Gender, n (%)</td>
<td></td>
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<td>0.10</td>
</tr>
<tr>
<td>Female</td>
<td>387 (54)</td>
<td>56 (46)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>330 (46)</td>
<td>66 (54)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity, n (%)</td>
<td></td>
<td></td>
<td>0.0001</td>
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<td>Black</td>
<td>16 (2)</td>
<td>3 (1)</td>
<td></td>
</tr>
<tr>
<td>Latino</td>
<td>400 (55)</td>
<td>65 (19)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>73 (10)</td>
<td>241 (70)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>75 (10)</td>
<td>10 (3)</td>
<td></td>
</tr>
<tr>
<td>Generation status, n (%)</td>
<td></td>
<td></td>
<td>0.85</td>
</tr>
<tr>
<td>Immigrant child</td>
<td>147 (21)</td>
<td>26 (22)</td>
<td></td>
</tr>
<tr>
<td>Immigrant parents</td>
<td>415 (59)</td>
<td>70 (60)</td>
<td></td>
</tr>
<tr>
<td>Parent(s) and child US born</td>
<td>141 (20)</td>
<td>21 (18)</td>
<td></td>
</tr>
<tr>
<td>SES, mean (SD)</td>
<td>1.41 (0.94)</td>
<td>1.43 (0.90)</td>
<td></td>
</tr>
<tr>
<td>Baseline smoking, mean (SD)</td>
<td></td>
<td></td>
<td>0.85</td>
</tr>
<tr>
<td>Lifetime smoking</td>
<td>0.08 (0.28)</td>
<td>0.16 (0.37)</td>
<td>0.03</td>
</tr>
<tr>
<td>Intention to smoke in the next</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 months</td>
<td>0.12 (0.32)</td>
<td>0.12 (0.33)</td>
<td>0.89</td>
</tr>
<tr>
<td>Stressors, mean (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative school stress</td>
<td>2.87 (1.68)</td>
<td>2.99 (1.77)</td>
<td>0.28</td>
</tr>
<tr>
<td>Negative family stress</td>
<td>5.18 (3.47)</td>
<td>5.47 (3.87)</td>
<td>0.21</td>
</tr>
<tr>
<td>Positive family stress</td>
<td>0.41 (0.58)</td>
<td>0.49 (0.62)</td>
<td>0.03</td>
</tr>
<tr>
<td>Negative peer stress</td>
<td>3.39 (2.80)</td>
<td>3.45 (2.91)</td>
<td>0.75</td>
</tr>
<tr>
<td>Negative personal stress</td>
<td>4.34 (2.46)</td>
<td>4.39 (2.47)</td>
<td>0.73</td>
</tr>
<tr>
<td>Positive personal stress</td>
<td>0.94 (0.79)</td>
<td>1.01 (0.87)</td>
<td>0.18</td>
</tr>
<tr>
<td>Acculturative stress</td>
<td>9.69 (2.37)</td>
<td>9.38 (2.66)</td>
<td>0.19</td>
</tr>
</tbody>
</table>

*aGender and ethnicity comparisons utilize chi-square analyses, all other analyses utilize independent t-tests.*

tried smoking at year 2, and 16% reported having intentions to smoke cigarettes within the next year. Males were significantly more likely to have ever smoked than females, \( p < .05 \).

**Attrition.** Of the 1,074 students who were given the baseline and stress checklist surveys and the 1-year follow-up survey, 358 (32%) students did not complete the follow-up survey or had missing baseline outcome data. Attrition analyses showed significant differences in some key variables between those students with complete data and those without (Table 2). Students who had incomplete data were more likely to be male and have higher positive family-related stress \( p < .05 \). Students who reported being a member of one or more race/ethnicity made up 70% of the students who dropped out. They were also more likely have smoked at baseline \( p < .05 \) and have higher means of friend smoking \( p < .05 \).

**Associations Between Stressful Life Events and Smoking Behaviors.** The associations among the stressful life event scales, acculturative stress, and smoking behaviors are shown in Table 3. Only two stress scales were significantly associated with smoking behaviors.
<table>
<thead>
<tr>
<th></th>
<th>Everyone OR (95%CI)</th>
<th>Males OR (95%CI)</th>
<th>Females OR (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lifetime Intention</td>
<td>12 Month</td>
<td>Lifetime Intention</td>
</tr>
<tr>
<td></td>
<td>Smoking$^1$</td>
<td></td>
<td>Smoking$^1$</td>
</tr>
<tr>
<td>Negative School Stress</td>
<td>1.12 (0.80-1.56)</td>
<td>1.58** (1.13-2.19)</td>
<td>1.24 (0.80-1.92)</td>
</tr>
<tr>
<td>Negative Family Stress</td>
<td>1.06 (0.74-1.53)</td>
<td>0.71 (0.50-1.00)</td>
<td>0.85 (0.50-1.46)</td>
</tr>
<tr>
<td>Positive Family Stress</td>
<td>1.12 (0.85-1.48)</td>
<td>0.93 (0.70-1.22)</td>
<td>0.74 (0.56-1.25)</td>
</tr>
<tr>
<td>Negative Peer Stress</td>
<td>1.05 (0.70-1.58)</td>
<td>1.27 (0.86-1.88)</td>
<td>0.96 (0.57-1.70)</td>
</tr>
<tr>
<td>Negative Personal Stress</td>
<td>1.58* (1.05-2.38)</td>
<td>0.97 (0.65-1.42)</td>
<td>1.89* (1.06-3.38)</td>
</tr>
<tr>
<td>Positive Personal Stress</td>
<td>1.05 (0.75-1.47)</td>
<td>1.25 (0.91-1.70)</td>
<td>0.99 (0.63-1.56)</td>
</tr>
<tr>
<td>Acculturative Stress</td>
<td>0.97 (0.72-1.31)</td>
<td>0.94 (0.71-1.24)</td>
<td>0.70 (0.46-1.05)</td>
</tr>
</tbody>
</table>

$^*$p < 0.05, $^{**}$p < 0.01.

1 Multilevel logistic regression odds ratios are adjusted for ethnicity, generation status, age, gender, past smoking, SES, parent’s smoking, and best friend’s smoking.

2 Multilevel logistic regression odds ratios are adjusted for ethnicity, generation status, age, gender, past smoking, past smoking intentions, SES, parent’s smoking, and best friend’s smoking.
Negative personal-related stress was a risk factor for lifetime smoking. Negative school-related stress was the only significant stress scale for smoking intentions. Negative school-related stress was also a risk factor.

The sample was stratified by gender, after testing for significant direct effects in the entire sample. Stratification is one method that can be used to test for moderation, although stratifying does not provide significance testing. The use of stratifying in these analyses was to control for potential confounding. By stratifying on the confounding variable, gender, it is possible to assess the relationships of interest, without the influence of the confounder. Gender was found to be a potential confounder of several associations. Negative personal-related stress was a risk factor with lifetime smoking in males, but not in females. Negative family-related stress and positive personal-related stress were also associated with smoking intentions in males but not in females. Negative family-related events were a risk factor while positive personal-related events were a protective factor. Negative school-related events and negative peer-related events were both risk factors for smoking intentions in females but not in males.

Moderation Analyses. As shown above gender was a potential confounder for five stress-smoking relationships; however, as stratification does not necessarily provide any evidence of a significant interaction or that gender is an effect modifier, interaction terms were tested. Gender was tested as a potential moderator of the relationship among each stress subscale, acculturative stress, and the two outcome variables (i.e., lifetime smoking and smoking intentions). Two significant interactions were found. For the lifetime smoking outcome, gender moderated negative family stress (Figure 1), and for the smoking intentions outcome gender moderated negative peer stress (Figure 2). The odds of being a lifetime smoker increased in both males and females as their negative family-related stress increased. However, simple slope testing showed that the slope of females was significantly different from zero ($p < .05$), whereas the slope for males was not ($p > .05$). This indicates that the relationship between negative family stress and lifetime smoking is much greater in females than it is in males. In the second interaction found, as negative peer stress increased, so did intentions to smoke in both genders. Both simple slopes were significantly different from zero indicating that negative peer stress strongly influences intentions in both genders.

![Figure 1](image1.png)

**Figure 1.** Dotted line = 95% confidence intervals for females; solid line = 95% confidence intervals for males.
Discussion

Understanding the risk and protective factors\(^1\) of smoking among adolescents continues to be a top priority for public health researchers. Many risk factors have been identified (e.g., depression, sensation seeking, rebelliousness, and stress); however, the mechanisms through which these risk factors work are still not well known (Booker, Gallaher, Unger, Ritt-Olson, and Johnson, 2004; Carvajal and Granillo, 2006; Goodman, 2000; Kopstein, Crum, Celentano, and Martin, 2001; Koval, Pederson, Mills, McGrady, and Carvajal, 2000; Steuber and Banner, 2006; Tyc et al., 2004; Wills, 1986; Wills, Sandy, and Yaeger, 2002; Wills, Vaccaro, and McNamara, 1994). One of the objectives of this study is to further current understanding of the relationship between stressful life events, acculturative stress and smoking behaviors among multicultural adolescents. The smoking behaviors that were addressed covered two levels/stages of smoking, life-time smokers (early experimenters) and those with intentions to smoke (preparers; Elder et al., 1990; Pierce, Choi, Gilpin, Farkas, and Merritt, 1996; Stern, Prochaska, Velicer, and Elder, 1987; Sun, Unger, and Sussman, 2005). Negative personal-related stress was a risk factor for lifetime smoking at the 1-year follow-up; this relationship was found to be confounded by gender. This association was significant among males, but not among females. Gender was also found to be a moderator of the relationship between negative family stress and lifetime smoking; in this relationship, females were more affected than males.

Negative school stress was a risk factor for smoking intentions over the entire sample; this relationship was also confounded by gender. The association was significant in females, but not in males. Negative family-related stress and positive personal-related stress were also confounded by gender. In both cases the associations were significant among males, but not with females. Negative family-related stress was a protective factor and positive personal stress was a risk factor. The association between negative peer-related events and

\(^1\)The reader is reminded that the concepts “risk and protective factors,” are often noted in the literature, without in an adequate delineation of their its dimensions (linear, non-linear), their “demands,” the critical conditions—endogenously as well as exogenous ones—which are necessary for either of these posited processes to operate (begin, continue, become anchored and integrate, change as de facto realities change, cease, etc.) or not to and whether their underpinnings are theory-driven, empirically based, individual and/or systemic stake holder-bound, based on “principles of faith” or what. This is necessary to clarify if these terms are not to remain as yet additional shibboleths in a field of many stereotypes. If we don’t currently know, in a generalizable sense, it is necessary to state this. Editor’s note.
smoking intentions was moderated by gender. The findings of this study help to provide evidence that the many changes that are occurring in an adolescent’s life are especially tumultuous. In the United States, many adolescents begin middle school in the sixth grade; the transition to a new school as well as a possible increase in academic workload and changes in current and future friendships adds to the stress level of these adolescents. Males may be especially sensitive to negative personal events leading to experimentation with smoking. However, the findings that negative family stress is protective may indicate that males utilize other coping methods to deal with these stressors. More research needs to be conducted to determine what methods are utilized. Findings also indicate that experiencing stress may lead to thinking about smoking in the future, as negative school- and peer-related stressors were risk factors for intending to smoke within the next year. The influence of these stressors also appears to work differently in males and females.

Studies have shown that stressful life events, as well as overall stress, have been associated with lifetime smoking and smoking progression longitudinally (Booker et al., 2004; Byrne, Byrne, and Reinhart, 1995; Koval, Pederson, and Chan, 2004; Koval, Pederson, Mills, McGrady, and Carvajal, 2000). Although at baseline, no individual stress scales were associated with lifetime smoking and total stress was associated with lifetime smoking, gender was not tested as either a confounder or a moderator; it is possible that gender may have masked actual associations (Booker et al., 2004). Some of the other findings from the baseline study were replicated; negative peer-related events were associated with intentions to smoke (Booker et al., 2004). Perceived stress has been associated with the progression from experimental smoking to regular smoking (Skara, Sussman, and Dent, 2001). It may be possible that stress plays a more important role in this progression than in the decision to smoke for the first time. Reducing school- and peer-related stressors should continue to be an important part of prevention programs, as they appear to be risk factors for smoking intentions. Experiencing high levels of these stressors may lead adolescents to seek out ways to relieve these stressors including thinking about or even planning to participate in risky health behaviors including smoking cigarettes. Unfortunately, in this sample, the prevalence of smoking was too low to examine progression to higher levels of smoking.

How one copes with stress may be a function of the cultural values that are imparted to them as a child and adolescent. Ethnicity may help to identify whether these values influence the stress-smoking relationship. As stated previously, the low prevalence of smoking in this sample precluded the testing of ethnicity as a moderator or confounder. Although it was hypothesized that acculturative stress would be associated with smoking behaviors, the findings of this study are not surprising. The scale used to measure acculturative stress was not a stressful events scale, but rather a perceived stress scale. Perceived stress scales do not have the predictive properties of stressful events scales. It is unclear whether acculturative stress would be significant in this population. Being born in the United States may lead to high levels of acculturation regardless of parents’ place of birth and the levels of acculturative stress may be low in this population. Conversely second-generation adolescents may be more exposed to their parent’s country of origin’s culture making them live with and adjust to two cultures increasing their levels of acculturative stress. The measure of acculturative stress used in this study is one that has not been used previously and therefore the validity of this measure is unknown and must be taken into account.

Limitations and Future Research. There are several limitations to this study. The findings from this study cannot be used to infer causality. These findings suggest that negative school-related stress may be a risk factor for smoking intentions; however, it is possible that the relationship is bidirectional. High levels of stress may increase the risk of smoking for an
adolescent, and they may find themselves in stressful situations due to smoking. The body’s reactions to the hormones released from smoking are very similar to those released during times of stress and so it is possible that smoking as a stress reliever may actually lead to an increase in smoking due to the physiological reactions. A study with only 1-year of follow-up is not long enough to determine the strength or direction of this relationship. Other factors such as depression, hostility, sensation seeking, or school achievement may also have an impact on this relationship. Smoking has been associated with these factors as outcomes and it is possible that these outcomes may in turn lead to increased levels of stress (Kassel, Stroud, and Paronis, 2003). Conversely, stress may lead to higher levels of depression, hostility, sensation seeking, and low school achievement; and in turn an adolescent may begin smoking or smoke more. Future studies should take into account these and other intermediate outcomes as well as address the relationship between stressful life events and smoking over a greater period of time.

Due to the small number of smokers and low unexplained variance in this sample it was not possible to address some of the other cultural values that may influence the relationship between both stressful life events and acculturative stress and smoking behaviors. Some of these values (e.g., machismo, marianism, simpatia, respeto) may help to explain the differing smoking rates of adolescents of different ethnicities/races. Further analyses of the stress-smoking relationship by ethnicity or generation status were not possible and should be taken into consideration in future studies. The analyses also did not take into account school-level variables such as smoking prevalence, SES, ethnic composition, and so forth, which may also be a potential confounder.

Attrition analyses showed that there were significant differences between those who participated in the follow-up survey and those who did not. Baseline smokers and students with friends who smoked were underrepresented in this sample. The findings from this study may not be as generalizable to seventh-grade multiethnic adolescents living in the greater Los Angeles area who have ever smoked or have a large number of friends who have ever smoked.

The size of the effects observed in this paper is very small and should be taken into consideration. The effect sizes found here are comparable to those found in a study by Wills (1986) that addressed associations between stressful life events and substance use. The effect sizes found ranged from .16 to .30. These are also considered to be small effect sizes according to Cohen (1969). It should be noted, however, that even small effect sizes can produce significant and informative results.

Finally, the use of a perceived stress scale to measure acculturative stress may help to explain the lack of significant findings. Perceived stress scales typically ask about stress that has occurred over the past month, where stressful life events checklists ask about stress experienced over the past 6 months to 1 year. A stressful life events checklist can be predictive over a fairly long period of time, anywhere from a few months to a few years (Cohen, Kamarck, and Mermelstein, 1983). A perceived stress scale has a much shorter predictive period. For example, the Cohen’s Perceived Stress Scale (PSS) is only predictive up to about 2 months (Cohen, Kamarck, and Mermelstein). This is due to the fact that the PSS is influenced by daily hassles, major events, and the availability of coping resources, all of which can have high variability (Cohen, Kamarck, and Mermelstein). The acculturative stress measure is one that was developed for this study and the predictive validity is not yet known. It is very possible that the predictive validity is small and only over a short period of time. The development of stressful life events that address acculturation may help to fix this limitation and should be addressed in future studies.
Conclusions

Negative peer- and school-related stressors are potential risk factors for smoking intentions among multiethnic adolescents. Prevention programs should focus on teaching coping methods that will specifically reduce these stressors and their effects. As adolescents transition from one stage of schooling, elementary to middle, they will experience many new stressors such as new school environment, new peers, and increased school workload. Preparing students for this by imparting positive and active coping methods may help to prevent experimentation with smoking. Future longitudinal studies should address the causality of the stress-smoking relationship as well as the role of acculturative stress and other chronic stressors. The validity of the perceived acculturative stress scale should be determined, as well as the development of an acculturative stress checklist. Inclusion of cultural values as well as other sources of stress (e.g., chronic stressors) may help to further understand this relationship and the mechanisms through which it operates. These studies should also address ethnic and generational differences in smoking and stress. The role of stress in the progression of smoking, whether stress is integral in the progression from experimentation to regular smoker, must also be addressed.

RÉSUMÉ

Habitudes tabagiques, événements de vie stressant et différences homme-femme: analyse longitudinale dans une population d’adolescents multiculturelle.

Beaucoup d’études ont adressé les associations entre les événements de vie stressants et le tabagisme jeunesse. Peu d’études, cependant, ont examiné des différences de genre, spécifiquement avec les échantillons multiculturels. Cette étude longitudinale examine le rapport entre 6 balances d’effort et comportements de tabagisme 716 jeunesse multiculturels des USA vivant dans la région plus grande de Los Angeles en 2000–2001. À la ligne de base la panne ethnique de l’échantillon était Latino de 63% et 26% Asian/PI et 70% étaient de 11 ans. Des événements personnels négatifs ont été associés à la vie fumant et des événements négatifs d’école ont été associés aux intentions de fumer. La stratification de l’échantillon par genre a indiqué que le genre a confondu le rapport entre l’effort et le tabagisme personnels négatifs de vie et l’effort négatif d’école, l’effort personnel positif et les intentions de fumer. Deux interactions significatives ont été trouvées. Les résultats indiquent qu’il y a des effets différentiels des événements stressants entre les genres qui peuvent mener à l’expérimentation ou aux intentions de tabagisme de fumer. Des implications et les limitations sont discutées.

RESUMEN

Un análisis longitudinal de los acontecimientos de vida agotadores, de los comportamientos que fuman, y de las diferencias de género en una muestra multicultural de adolescentes

Muchos estudios han tratado las asociaciones entre los acontecimientos de vida agotadores y fumar adolescente. Pocos estudios, sin embargo, han examinado diferencias del género, específicamente con las muestras multicultural. Este estudio longitudinal examina la relación entre 6 escalas de la tensión y comportamientos que fuman 716 adolescentes multicultural de los E.E.U.U. que viven en la mayor área de Los Ángeles en 2000–2001. En la línea de fondo la avería étnica de la muestra era el 63% Latino y los 26% Asian/PI y los 70% eran 11 años de la edad. Los acontecimientos personales negativos fueron asociados al curso de
la vida que fumaba y los acontecimientos negativos de la escuela fueron asociados a intenciones de fumar. La estratificación de la muestra por género indicó que el género confundió la relación entre la tensión y fumar personales negativos del curso de la vida y la tensión negativa de la escuela, la tensión personal positiva y las intenciones de fumar. Dos interacciones significativas fueron encontradas. Los resultados indican que hay efectos diferenciados de acontecimientos agotadores entre los géneros que pueden conducir a la experimentación o a las intenciones que fuma de fumar. Se discuten las implicaciones y las limitaciones.

THE AUTHORS

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diabetes and smoking prevention, and b) epidemiological population-based studies in ocular disease in Latinos and in a multi-ethnic cohort of children. He is a recipient of the USC Associates Award for Excellence in Teaching, and he was elected to the UCLA School of Public Health Alumni Hall of Fame. In 2006, Dr. Azen received an honorary doctorate in biomedical innovations from the University of Salerno, Italy. He has actively sought and received grant funding for research conducted at USC. Dr. Azen has also been a consultant to numerous research projects.

Lourdes Baezconde-Garbanati, Ph.D., MPH, is a faculty member in the Department of Preventive Medicine at the University of Southern California (USC) Keck School of Medicine, and holds a joint appointment in the Department of Sociology. Trained in Europe, Latin America and the United States, Dr. Baezconde-Garbanati speaks multiple languages and holds 5 academic degrees in Clinical Psychology and Industrial Psychology from her native Dominican Republic; a masters in Medical Psychology from Université Catholique de Louvain in Belgium, a masters of public health specializing in Community Health Sciences and a Ph.D. in Public Health, from the University of California, Los Angeles (UCLA). She teaches courses on gender and ethnic minority health, on culture and global health, and community organizing and mobilization at the Keck School of Medicine. She conducts research in cancer control focusing on tobacco health disparities and other related issues. She is a co-investigator in 3 transdisciplinary centers funded by the National Institutes of Health at the Institute for Health Promotion and Disease Prevention Research, including the NCI funded Transdisciplinary Center on Energetics and Cancer (TREC –working on obesity related issues), the NCI funded Pacific Rim Transdisciplinary Tobacco and Alcohol Use Research Center (TTUARC) (focusing on tobacco across cultures), and the NIDA funded Transdisciplinary Prevention Center (with a focus on drug and alcohol abuse). She is the Principal Investigator and Director of the Hispanic/Latino Tobacco Education Partnership, one of seven priority population partnerships for the state of California’s tobacco control program; the Director of the Southern California Partnership Program Office of the National Cancer Institute’s Cancer Information Service (C.I.S.). In addition, Dr. Baezconde-Garbanati sits on the Institute for Health Promotion and Disease Prevention (IPR) Directorate overseeing community outreach and education functions, information dissemination, knowledge transfer and translational activities with a focus on medically underserved, culturally and ethnically diverse populations. Dr. Baezconde-Garbanati is a recognized scientist in the Hispanic/Latino community, and has served as a strong liaison between community-based programs and academic settings. She has numerous publications and is a well-known leader in tobacco control. For her contributions she has received national recognitions and awards including the American Legacy Foundation Community Activism Award; the Community, Culture and Prevention Science award from the Society for Prevention Research; and the American Public Health Latino Caucus Distinguished Career Award, among other.
Brian Lickel received his Ph.D. in Social Psychology from the University of California, Santa Barbara in 2000, after which he joined the faculty at USC. While completing his Ph.D., Brian was supported by a National Science Foundation graduate fellowship. Dr. Lickel’s research focuses on the cognitive processes underlying people’s everyday understanding of social groups. In addition, Dr. Lickel investigates how people make complex social judgments pertaining to morality. At the intersection of these two issues, Dr. Lickel is currently investigating when and why people make judgments of collective responsibility. Collective responsibility occurs when all of the members of a social group are held responsible and are punished for the blameworthy actions of a single member of the group. This line of research on collective responsibility includes a number of facets, such (a) cultural differences between Japan, China, and the U.S. regarding when and why collective responsibility judgments are made, (b) the role of emotions such as shame, guilt, and anger in collective responsibility judgments, and (c) how judgments of collective responsibility may form the starting place for violent intergroup conflict and war. This research is supported by a grant from the National Science Foundation.

C. Anderson Johnson, Ph.D. is Sidney Garfield Professor of Preventive Medicine and Psychology, and Director, Institute for Health Promotion and Disease Prevention Research, University of Southern California. He also directs the Division of Health Behavior Research in the USC Keck School of Medicine that houses USC’s Master of Public Health and Health Behavior/Public Health PhD program, and a baccalaureate program in health promotion and disease prevention studies. Dr. Johnson is principal investigator and Director of the Pacific Rim Transdisciplinary Tobacco and Alcohol Use Research Center (PR TTAURC) (funded by NCI, NIDA, and NIAAA) and PI and director of the China Seven Cities Study (NCI, Garfield Endowment). He is Co-PI of the USC Transdisciplinary Drug Abuse Prevention Research Center funded by NIDA. Dr. Johnson is visiting professor of public health at the Peking University School of Public. Dr. Johnson has 28 years of experience in scientific and administrative leadership of large-scale domestic and international community-based research projects. Dr. Johnson’s contributions to prevention science have focused on community-based approaches to tobacco, alcohol, and drug abuse prevention, most recently across a range of cultural, environmental, and international contexts. His current work focuses on dispositional and contextual characteristics as they work in combination (culture by environment and gene by environment interactions) to affect tobacco and alcohol use trajectories and prevention at different points in the trajectories. Research interests include gene-environment interactions in appetitive behaviors and their prevention and control, including neural mechanisms of regulation. Dr. Johnson received the PhD degree in social psychology with a neuroscience emphasis from Duke University in 1974, and did postdoctoral work in environmental psychology at the National Institute of Standards and Technology, and in epidemiology at the University of Minnesota. Dr. Johnson has published more than 200 research papers, books, and book chapters. Dr. Johnson is Chair of the USC Research Committee and is Co-Chair of its Global Health Committee.
Glossary

Stressful Life Events: Changes in an individual’s life that are likely to have an impact on subsequent behavior can include daily hassles and uplifts.

Acculturative Stress: The psychological, somatic, and social difficulties that may accompany acculturation processes.

Lifetime Smoking: Ever smoking a cigarette, even a few puffs.

Smoking Intentions: Intention to smoke in the next 12 months.

References


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