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Cognitive Susceptibility to Smoking: Two Paths to Experimenting among Mexican Origin Youth

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Abstract

Cognitive susceptibility to smoking, defined as the lack of a firm commitment not to smoke in the future or if offered a cigarette by a friend, begins in childhood and is an early phase in the transition from never to ever smoking. Our objectives were to examine susceptibility to smoking and other psychosocial risk factors for experimentation with cigarettes among Mexican origin adolescents and to determine whether susceptibility status moderates the relationship between established risk factors for experimentation with cigarettes and future experimentation. We examined susceptibility and several psychosocial factors associated with susceptibility as baseline predictors of experimentation after 3 years of follow-up among 964 Mexican origin girls and boys between 11 and 13 years of age from the Houston metropolitan area. Participants were recruited between May 2005 and October 2006 and reported that they had never experimented with cigarettes at baseline. Baseline susceptibility and experimentation rates were 23% and 9%, respectively, whereas the follow-up experimentation rate, among those who had not experimented at baseline, was 22%. Susceptible adolescents at baseline were 2.6 times more likely to have experimented with cigarettes by follow-up. Baseline susceptibility moderated the relationship between experimentation at follow-up and the psychosocial risk factors assessed at baseline. Susceptibility is a valid and strong marker for the transition to experimentation for Mexican origin adolescents. Our results suggest that tailoring primary prevention programs by a youth's susceptibility status may increase the efficacy of prevention efforts among Mexican origin youth.

Introduction

The first step in the transition to current smoking is becoming susceptible to smoking (1–6). The construct of cognitive susceptibility to smoking which integrates behavioral intentions to smoke in the future, peer influence, and expectations for future behavior, can vary over time and is amenable to intervention. Pierce et al. (5) developed a measure of cognitive

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susceptibility to smoking among adolescents that has been validated and used by many other researchers to successfully predict smoking among middle and high school students (7). Between 32% to 55% of susceptible youth (8) and up to 63% of experimenters (9) became established smokers.

The time before and/or during susceptibility lends itself to primary prevention efforts. In fact, Meshack et al. (10) reported a 46% susceptibility reduction among sixth grade students in Texas after being exposed to an intensive media campaign. Susceptible adolescents were twice as likely to experiment with cigarettes than committed never-smokers (5, 9, 11, 12), and experimentation with cigarettes led to regular smoking and nicotine addiction (13–15). Similarly, after adjusting for sex, race, educational attainment, and nicotine dependence in a cohort of young adults in Michigan, smoking cessation was twice as likely to be successful among young adults who initiated smoking after 14 years of age when compared with those who initiated smoking before 14 years of age (13–15). These studies illustrate the importance of age in smoking trajectories.

The notion of susceptibility has consistently showed robust predictive abilities. It is the best predictor of experimentation (5, 9, 12, 16), initiation (9), and ever smoking (17). After 3 years of follow-up, transition rates to any smoking were higher among adolescents between the ages of 12 and 14 years, identified as susceptible to smoking by the California Tobacco Surveys compared with those identified as committed never smokers (18). Susceptibility also influences subsequent smoking habits in older adolescents. The odds of smoking increased 3-fold after 2 years of follow-up among susceptible teens (age 14–17 years) participating in a computer-based prevention program in the Pacific Northwest compared with committed never smokers (19).

Despite the large body of literature available on smoking behavior and current smoking among adolescents in the United States, there has been limited exploration into the risk factors associated with the early stages of smoking behavior, especially among Hispanic adolescents. Hispanic adolescents report the highest rates of susceptibility (20) and experimentation (21) when compared with their white and African-American counterparts. Susceptibility among Hispanic adolescents is significantly associated with sex, age, school performance, smoking status of parents and other household members, friends' smoking status, family approval and level of acculturation, subjective social status (SSS), positive attitudes toward smoking, and positive expectations about smoking (22, 23). Hispanic students who were susceptible to smoking were four times more likely to ever smoke than those who were not susceptible (17) and had a higher prevalence of smoking after 1 year of follow-up (7). In addition, friends' tobacco use is a consistent and strong predictor of susceptibility (17), smoking initiation (24), and lifetime and current smoking (25) among Hispanic adolescents.

Using well-established predictors of experimentation and smoking initiation assessed at baseline, this study aims to evaluate the association between cognitive susceptibility to smoking and experimentation with cigarettes among Mexican origin adolescents who had never experimented at baseline. We focus on Mexican origin youth for two reasons. First, the term Hispanic (26) includes individuals from diverse ethnic backgrounds that are culturally distinct from each other. Most research to date has examined Hispanic youth as a group, and thereby may obscure unique risk factors associated with subgroups of Hispanics. Second, people of Mexican origin represent the largest and most rapidly growing subgroup of Hispanics in the United States. In turn, Hispanics are the largest and most rapidly growing ethnic group in the United States. For these reasons, studying smoking behavior in this population is timely and warranted. We hypothesized that, similar to adolescents from other racial/ethnic groups, Mexican origin adolescents who were susceptible to smoking at

baseline would be at increased risk of experimentation at 3 years of follow-up compared with committed never smokers, and that after controlling for psychosocial risk factors of smoking, susceptibility would remain the major predictor of experimentation among Mexican origin adolescents. In addition, we examined the potential moderating influence of susceptibility to smoking on other established covariates of experimenting with cigarettes.

Materials and Methods

Participants

All participants in this study were drawn from households that are part of an ongoing prospective cohort of Mexican origin households developed and maintained by the Department of Epidemiology at The University of Texas M. D. Anderson Cancer Center since July 2001, called the Mexican American Cohort Study (MACS). Our study uses baseline and follow-up questionnaire data from the Mexican American Tobacco Use in Children (MATCh) study, a mixed cross-sectional, longitudinal cohort of 1,328 Mexican origin adolescents between 11 and 13 y of age, nested within the MACS. It is designed to assess the role that demographic, psychosocial, and behavioral constructs may play in the transition from never-smoking to experimentation with cigarettes. Detailed descriptions of the recruitment methodology for MACS and MATCh have been published. The study was approved by the Institutional Review Board at The University of Texas M. D. Anderson Cancer Center. Parents/guardians provided written consent and the adolescent provided written assent.

Procedure

At the initial home visit, baseline smoking status and psychosocial measures were collected from the adolescent via a self-administered 195-item questionnaire completed on a personal digital assistant to ensure privacy and confidentiality of the responses. The survey was offered to each participant in Spanish and English and took approximately 45 minutes to complete. Participants received a $25 gift card upon completion of the interview. Data were downloaded directly from the personal digital assistant into a password-protected database accessible by study staff only. Participants were contacted at three time points via telephone to update their smoking status and completed a final home visit (at 3 years) in which the baseline questionnaire was readministered.

Measures

Our two major outcome measures were cognitive susceptibility to smoking and experimentation. Three items assessed susceptibility to smoking (5). To be coded as “committed never smokers,” participants responded “no” to “Do you think you will try a cigarette soon?” and “definitely not” to “If one of your best friends were to offer you a cigarette would you smoke it?” and “Do you think you will be smoking cigarettes 1 year from now?” Experimentation and smoking behavior were assessed at baseline and follow-up based on the following two items: (*a*) “Have you ever smoked a whole cigarette?” and (*b*) “Have you ever tried a cigarette, even a puff?” Participants who responded negatively (“no”) to the two questions probing experimenter status at baseline, but who responded positively (“yes”) to either question during follow-up, were categorized as experimenters. Covariates included established risk factors for experimenting with cigarettes. For a detailed description of the covariates assessed, please see Table 1.

Statistical Analysis

We calculated the prevalence or mean and SD of each predictor variable. Differences among predictor variables by baseline susceptibility status were assessed by Pearson’s χ^2 for

categorical variables and Student's *t* tests for continuous variables. We conducted univariate logistic regression analyses to examine the relations between the baseline predictor variables and future experimentation reported at follow-up. All variables with a univariate association of $P \leq 0.05$ were simultaneously entered into a multivariable logistic regression analysis to develop the final model. Odds ratios (OR) and 95% confidence intervals (CI) were estimated. To adjust for socioeconomic status (SES), parental educational attainment was forced into all multivariable models. We used educational attainment rather than household income as an indicator of SES, because 50% of the parents did not report their income, whereas the majority reported educational attainment. Variables were maintained in the multivariable models based on two criteria: (*a*) if they were significant based on the results of Wald statistics at a type I error rate of 0.05 and (*b*) if their inclusion resulted in a nonsignificant (defined as $P > 0.1$) Hosmer and Lemeshow goodness-of-fit statistic for the overall model.

To determine if susceptibility moderates the influence of the risk factors obtained from the multivariable model on experimentation, we followed methodologies outlined by Baron and Kenny (27) and Kraemer et al. (28). For this analysis, we created an index from the variables that were retained in the multivariable model examining predictors of future experimentation. The index was a sum of the number of risk factors each participant reported. We next created an interaction term between the index variable and susceptibility. The interaction term and the two main effects (the index variable and susceptibility) were simultaneously entered into a logistic regression model, adjusting for parental educational attainment. Having established moderation (presence of a significant interaction term), the sample was stratified on susceptibility. Next, two unconditional logistic regressions were completed to examine the relationship between experimentation and the variables found to be significant in the multivariable model, within levels of susceptibility, adjusting for parental educational attainment. The Hosmer and Lemeshow goodness-of-fit test statistic was used as an indicator of model fit for each multivariable model (29). All computations were done using *Stata v9.0* software (30).

Results

Descriptive Statistics

Of the 1,328 Mexican origin youth enrolled at baseline, 129 participants had experimented at baseline and were therefore excluded from the current analysis. Of the 1,199 participants who had never smoked at baseline, 1,031 (or 86.0%) had follow-up smoking status data for analysis. There were no differences in terms of sex, age, country of birth, and baseline susceptibility status between the 1,031 who completed follow-up and the 168 who did not complete follow-up ($P > 0.25$ for all). Nine hundred and sixty-four participants (80.4% of the 1,199) also had parental educational data. There were no differences in terms of sex, age, country of birth, and baseline susceptibility status between the 964 for whom both follow-up smoking status and parental educational attainment data were available compared with the 235 for whom these data were not available ($P > 0.15$ for all). Therefore, the final sample size for the current analysis is $n = 964$.

The mean age at study enrollment was 11.8 years, and the population was equally distributed with regards to sex. Almost 23% of the population reported themselves as susceptible to smoking at baseline. Means and percentages for the primary variables of interest are shown in Table 2 and are presented stratified by baseline susceptibility status. Baseline susceptibility differences emerged in each of the majority of risk factors examined including those related to the school environment, social influence, normative beliefs, and attitudes. However, country of birth, years of residence in the United States (among those

born in Mexico), and parental educational attainment were not associated with baseline susceptibility status.

Smoking Transitions

Table 3 presents the transitions in smoking stages over the follow-up period among participants who had never experimented at baseline. The ever susceptibility rate among never-smokers was 48%, and 22% reported being new experimenters by final follow-up. Of those who were susceptible at baseline, 43% had experimented with cigarettes by follow-up compared with 15% among those who were committed never smokers at baseline ($P < 0.001$). Although the proportion of boys transitioning from susceptible to experimenter was higher than that of girls (49% versus 34%), this difference was not significant ($P = 0.18$).

Prediction of Experimentation

Univariate logistic regression analyses showed that a majority of the baseline predictor variables were associated with new experimentation in the expected direction (data not shown). Two multivariable logistic regression models were developed to examine the association of each baseline characteristic and experimentation (Table 4). The first model (without baseline susceptibility status included as an explanatory variable) identified several significant predictors of experimentation, including being male, being 13 years of age, having low SSS, having some positive outcome expectations, living with a householder who smokes, and having had at least one school detention, all of which were associated with experimenting with cigarettes at follow-up. When we added baseline susceptibility status into the model to evaluate how it modified these associations, susceptibility was the strongest psychosocial predictor of experimentation (OR, 2.61; 95% CI, 1.79–3.80), and influence from SSS was reduced. Although having at least one friend who smokes was a strong predictor of experimentation in the multivariable models, when baseline susceptibility was added into the model, the goodness-of-fit statistic decreased to below $P < 0.10$. Therefore, peer social influence was not included in the final models and was removed from the analysis investigating the moderator effect of susceptibility.

In the test for moderation, baseline susceptibility status (OR, 6.08; 95% CI, 2.56–14.45), the index variable (OR, 1.95; 95% CI, 1.66–2.31), and the interaction term (OR, 0.75; 95% CI, 0.58 –0.97) all achieved significance (data not shown). Therefore, we stratified by baseline susceptibility (Table 5) and completed two unconditional logistic regression analyses.

Among those who were susceptible at baseline, only being 13 years of age at baseline and living in a household where someone smokes remained significant predictors of future experimentation. However, among those who were not susceptible, the only baseline characteristic examined that was not a significant predictor of future experimentation was baseline SSS. Neither of the Hosmer and Lemeshow goodness-of-fit indices were significant, indicating adequate fit for each model.

Discussion

In this study, we examined cognitive susceptibility to smoking as well as other well-established risk factors associated with experimenting with cigarettes among Mexican origin youth ages 11 to 13 years. As hypothesized, and similar to adolescents from other racial/ethnic groups, we found that after controlling for psychosocial risk factors of smoking, susceptibility remained the major predictor of experimentation among Mexican origin adolescents. Consistent with previous research, our results lend support to the notion that the predictors of experimenting and smoking are universal (31, 32). Of equal importance, we

found that baseline susceptibility status moderated the relationship between the baseline risk factors and future experimentation with cigarettes.

To date, very few studies based solely on longitudinal data have reported an association between susceptibility to smoking and experimentation with cigarettes in a Mexican origin sample. Gritz et al. (17) suggested that susceptibility to smoking may be an important primary predictor or mediator of ever-smoking among adolescents. Our results lend partial support to this notion: after 3 years of follow-up, susceptibility was the strongest predictor of experimentation after adjusting for demographic and psychosocial variables. In addition, we found that susceptibility moderated the relationship between the baseline risk factors and future experimentation with cigarettes, underscoring the potential importance of developing targeted primary prevention programs. However, it is also probable that susceptibility is a mediator of ever smoking. For example, the smoking behaviors and normative beliefs regarding smoking of the members of a teen's social network could strongly influence a teen and could be one of the instigating factors in the teen becoming susceptible in the first place. In such an analysis, susceptibility status would mediate the relationship between aspects of the network and new experimentation.

Among those who were susceptible at baseline, only age and living with a household member who smokes predicted experimentation. However, the majority of established risk factors for experimenting with cigarettes predicted future experimentation among those who were committed never smokers at baseline. Although the majority of these risk factors are commonly reported in the literature, there have been no studies, to our knowledge, examining and comparing the risk factors between early phase smoking groups. Our results suggest that there are different paths to experimentation based on susceptibility status, further suggesting that tailoring smoking prevention by susceptibility status could be useful.

Ever experimentation rates increased from a 9% rate at baseline to 22% by follow-up. After stratifying by sex and age, differences were apparent. Almost half, 47%, of 13-year-old boys who had never smoked at baseline had experimented at follow-up compared with 24% of 13-year-old girls (data not shown). In the multivariable models, as expected, both sex and age were strongly associated with experimentation. These results are consistent with previous findings based on the MATCh cohort (33) and other studies with Hispanic youth (17).

Social factors were also influential in our study. Living in a home with a smoker— be that a family member or other householder—was predictive of experimentation. Chalela et al. (25) reported a 38% increased lifetime prevalence of smoking among Latino adolescents whose father smokes, whereas Gritz et al. (17) reported an increased risk of ever smoking among Hispanics who had at least one household member (other than parent or sibling) who smokes.

We found that having had at least one school detention was significantly associated with experimentation for those who were committed never smokers at baseline (OR, 2.38). Other studies have shown similar significant positive associations between detentions and susceptibility (17, 23) and smoking (34).

Finklestein et al. (34) found that lower SSS predicted current and future smoking among middle and high school students. Ritterman et al. (35) reported similar findings in low SES Mexican adolescents ages 12 to 22 years. When compared with nonsmokers, current smokers believed they were of a lower social status at the society level. In our study, children who perceived themselves as having lower social status were more likely to experiment by follow-up (OR, 1.45; $P = 0.037$). Because SSS predicts susceptibility (33),

the relationship between SSS and experimentation could have been masked once we added susceptibility to the model.

Peer smoking has been repeatedly reported as the strongest predictor of smoking across racial and ethnic groups. Having friends who smoke is a strong predictor of smoking initiation (2), ever-smoking (22), and lifetime and current smoking (25) among Hispanic adolescents. Whereas Elder et al. (36) reported no association between peer smoking and susceptibility or ever-smoking in a cohort of Mexican-American migrant adolescents, Vitoria et al. (37) reported positive correlations between intentions to smoke over the next year and peer social influence and smoking initiation in Portuguese adolescents. We found that having at least one friend who smokes significantly predicted experimentation after 3 years of follow-up. After adjusting for susceptibility, although the effect of peer smoking was less robust, it remained a significant predictor, although its inclusion significantly reduced the model fit. Because smoking susceptibility combines peer influence with behavioral intentions, it is possible that the model was over-fit. An alternative explanation is that susceptible teens change friendship groups to include smokers to increase opportunities to experiment. If this is the case, diagnosing susceptibility could lead to an intervention to dissuade them from adding this strong additional risk factor for smoking.

Without adjusting for intentions to smoke, Chalela et al. (25) reported an association between positive attitudes and lifetime and current smoking among U.S./Mexico border youth. However, Vitoria et al. (37) reported no association between attitudes toward smoking and intentions to smoke among Portuguese adolescents. We found that these same attitudes and positive expectations toward smoking, in particular, predicted experimentation for those who were committed never smokers at baseline. Among those who were susceptible at baseline, positive expectations were no longer significant to the model, reinforcing the fact that a child's expectations about smoking are highly correlated with susceptibility (23).

None of the four indicators of acculturation we examined, country of birth, parent and child linguistic acculturation, or years of residency in the United States among those born in Mexico, were associated with experimentation in our study. Most participants were born in the United States and most reported high levels of acculturation. Among the adults in the MACS study, from where are participants are drawn, we found that acculturation impacted smoking status among women, but not men (38). Because acculturation is a process through which individuals change their values and behaviors as a result of social interaction with people, it is possible that we do not observe a relationship between the indicators of acculturation and experimentation in youth, because youth are more immersed in U.S. culture via both the school and social media compared with their parents.

Although we found that susceptibility predicted new experimentation, like most measures of latent constructs, prediction was not perfect. Among the boys, 20.5% of the baseline committed never smokers subsequently reported experimenting with cigarettes as did 11.2% of the girls. These data suggest that the current measure of cognitive susceptibility can be further improved by including other cognitions about smoking such as satisfying curiosity and belief that there are social gains associated with smoking.

Study Limitations and Strengths

As with all studies, ours has some limitations. Comparisons across studies are hampered by differences in ages of the population and in outcome measures. Defining experimentation can be challenging as definitions have evolved over time. Experimenters have been defined as those smoking "less than weekly" (39) as well as those having smoked "1 to 100 cigarettes in lifetime but not in the last 30 days" (40). Variability in these definitions makes

it difficult to compare smoking behavior across studies. A more common outcome measure in young people is ever-smoking, or lifetime prevalence of smoking, since there are few regular smokers at such young ages. Gritz et al. (22) reported a 26% prevalence of ever smoking among Hispanic elementary and middle school students, and Chalela et al. (25) reported a prevalence of 18% among Latino middle school students. The prevalence of ever experimenters in our data is comparable with previous published rates, but was lower than expected among girls.

Our sample age was slightly skewed to younger participants; therefore, as we continue to track the cohort, we will be able to determine if the susceptible participants transition from experimenting to current and dependent smoking. We were not able to assess the effect of, and adjust for, several other potentially confounding variables including depression. Huang et al. (19) reported an increased risk of susceptibility in participants who reported being depressed, although major depression was not found to be associated with experimentation in a cohort of Latino adolescents (41). As we continue to track the participants, we will assess depression.

In addition, smoking rates in this study were self-reported and unverified by biological samples and, hence, were possibly under-reported. The half-life of cotinine, a by-product of nicotine, is short, and therefore, we would have been able to detect smoking during the previous 24 hours only, which may not have been very helpful with the low frequency of smoking reported by our participants. However, studies indicate that the validity of self-reported data increases if participants believe they may be asked to provide a biological sample (42), which was the case in our study. Finally, certain culturally related concepts, *respeto* (respect) and *simpatia* (niceness/sympathy), also need to be considered as both are likely to increase participation rates and the quality of the data. *Simpatia* is also likely to increase socially desirable responses, possibly resulting in under reporting of smoking, especially by the girls (43).

Conclusions

Of the predictors we measured, susceptibility to smoking was the strongest predictor of subsequent experimentation among Mexican origin adolescents. This finding is consistent with previous research based on multiethnic samples and lends support to the notion that the predictors of experimenting with cigarettes are universal. In addition, we found unique predictors of experimentation based on baseline susceptibility. To prevent experimentation and thereby habitual smoking later in life, future studies and interventions could focus on risk factors for susceptibility. The data further suggest that culturally sensitive conventional prevention strategies, attempting to change adolescents' attitudes and expectations regarding smoking via peer influence, may be more beneficial for youth who are not susceptible to smoking compared with their susceptible peers. Future studies should explore other behavioral and genetic risk factors of susceptibility and experimentation, such as sensation seeking, risk taking, parenting style and the value parents place on nonsmoking behavior, as well as identify protective factors for susceptibility by further observing individuals who regressed from being susceptible to committed never smokers over time. Although our results are consistent with findings based on multiethnic samples, given the increasing number of Hispanics and people of Mexican origin, in particular, in the United States, it continues to be important to examine ethnic-specific risk factors of susceptibility and experimentation to enhance prevention efforts in this growing population.

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Table 1

Measures assessed on the personal digital assistant

Measure/construct	Items
School characteristics	
Detentions	Participants were asked “During this school year, how many detentions and suspensions have you had?” Responses were coded as “none” or “one or more.”
SSS (44)	Using a 10-rung ladder, participants are asked “At the top of the ladder are kids who are best off—get good grades, have lots of friends, or do well at sports. At the bottom are kids who are worst off—get poor grades, have few friends, or do poorly in sports. Choose the *one* rung where you think you are on the ladder.” Responses of 10 or 9 were coded as “high” and 8 and below as “low.”
Peer & family influence	
Household members smoking behavior	Created an index of all household members who the participant reported she lived with who smoked. Responses were dichotomized into “lives with at least one household member who smokes” or “does not.” We examined the extent to which adolescent reports on mother’s smoking status and mother’s self-reports on smoking are concordant with one another. Overall, we found good concordance (94–96% exact agreement) between mother self-reports and adolescent reports on her smoking (45).
Friends smoking behavior	Participants who responded “1 or more” to either “How many of your friends smoke?” or “How many of your closest friends smoke?” were coded as “at least one;” all other participants were coded as “none.”
Attitudes toward smoking and normative beliefs	
Temptations to smoke (46)	Assessed 14 different situational temptations to try smoking, e.g., “With friends at a party,” analyzed as one scale (Cronbach’s $\alpha = 0.90$). Responses were made on a five-point scale ranging from “not at all tempted” to “extremely tempted.” Participants who responded “not at all” to all items were coded as “none;” all others were coded as “some.”
Positive outcome expectations (47)	Seven items assessed positive expectations, e.g., “I think smoking would make me look more mature.” (Cronbach’s $\alpha = 0.88$). Responses were made on a four-point scale ranging from “strongly disagree” to “strongly agree.” Participants who responded “strongly disagree” to all items were coded as “none;” all others were coded as “some.”
Peer and family normative influence (48)	Assessed normative beliefs of family and peers, i.e., “How would your parents feel about your smoking cigarettes?” and “How would your close friends feel about your smoking cigarettes?” Responses were made on a four-point scale ranging from “strongly approve” to “strongly disapprove.” Responses of “strongly disapprove” were compared with all other responses.
Acculturation	
Country of birth	Either United States or Mexico
Years in United States	Assessed among participants born in Mexico only.
Acculturation scale (49)	Assessed using four items that ascertain language used when reading, speaking at home, speaking with friends, and thinking. The scale has excellent internal reliability among Mexican Americans ($\alpha = 0.92$). Responses were made on a five-point scale ranging from “only Spanish” to “only English.” Scores of 3 or more were coded as “high acculturation,” and those of 2.75 or below were coded as “low.”
Parental SES	
Parental education	Educational attainment was divided into two categories: “less than high school” and “high school/ General Educational Development equivalency or more than high school.”

NOTE: All Cronbach’s alphas are derived from the baseline study data.

Table 2

Descriptive statistics by susceptibility status at baseline (n = 964)

Baseline characteristics	Total	Status at baseline		
		Committed never smokers (n = 745; 77.3%)	Susceptible (n = 219; 22.7%)	P
	n (%)	n (%)	n (%)	
Sex				0.008
Female	499 (51.8)	403 (80.8)	96 (19.2)	
Male	465 (48.2)	342 (73.5)	123 (26.5)	
Age at enrollment				0.000
11 and 12 y	716 (74.3)	578 (80.7)	138 (19.3)	
13 y	248 (25.7)	167 (67.3)	81 (32.7)	
Mean (SD)	11.8 (0.8)	11.8 (0.8)	12.1 (0.9)	
Country of birth				0.582
Mexico	323 (33.5)	253 (78.3)	70 (21.7)	
USA	641 (66.5)	492 (76.8)	149 (23.2)	
Years in United States;* mean (SD)	8.0 (3.5)	8.0 (3.4)	7.9 (3.8)	0.816
Language acculturation				0.217
Low	205 (21.3)	165 (80.5)	40 (19.5)	
High	759 (78.7)	580 (76.4)	179 (23.6)	
Parent educational attainment				0.818
Less than high school	632 (65.6)	487 (77.1)	145 (22.9)	
High school graduate or more	332 (34.4)	258 (77.7)	74 (22.3)	
Parent acculturation; mean (SD)	2.1 (0.9)	2.2 (0.9)	2.0 (0.9)	0.046
Detentions in school				0.000
None	707 (73.3)	574 (81.2)	133 (18.8)	
At least one	257 (26.7)	171 (66.5)	86 (33.5)	
Social status				0.000
Low	493 (51.1)	348 (70.6)	145 (29.4)	
High	471 (48.9)	397 (84.3)	74 (15.7)	
Household member smokers				0.001
None	590 (61.2)	478 (81.0)	112 (19.0)	
At least one	374 (38.8)	267 (71.4)	107 (28.6)	
Peer smokes				0.000
None	745	686 (92.1)	59 (7.9)	
At least one	219	163 (74.4)	56 (25.6)	
Friends norms				0.000
Do not strongly disapprove	442 (45.9)	293 (66.3)	149 (33.7)	
Strongly disapprove	522 (54.1)	452 (86.6)	70 (13.4)	
Family norms				0.000
Do not strongly disapprove	165 (17.1)	107 (64.8)	58 (35.2)	
Strongly disapprove	799 (82.9)	638 (79.8)	161 (20.2)	
Temptations to smoke				0.000

Baseline characteristics	Total	Status at baseline		
		Committed never smokers (*n* = 745; 77.3%)	Susceptible (*n* = 219; 22.7%)	*P*
	n (%)	*n* (%)	*n* (%)	
None	503 (52.2)	443 (88.1)	60 (11.9)	
Some	461 (47.8)	302 (65.5)	159 (34.5)	
Positive outcome expectations				0.000
None	590 (61.2)	516 (87.5)	74 (12.5)	
Some	374 (38.8)	229 (61.2)	145 (38.8)	
Experimenter status				0.000
New	208 (21.6)	115 (55.3)	93 (44.7)	
Never	756 (78.4)	630 (83.3)	126 (16.7)	

* Among youth born in Mexico.

Table 3

Transitions in smoking stage from baseline through follow-up (n = 964)

Baseline susceptibility status	Committed never smokers (n = 296; 30.7%)	Ever susceptible (n = 460; 47.7%)	New experimenter (n = 208; 21.6%)
	n (%)	n (%)	n (%)
Total			
Committed never smoker (n = 745)	296 (39.7)	334 (44.8)	115 (15.4)
Susceptible (n = 219)	0 (0.0)	126 (57.5)	93 (42.5)
Girls			
Committed never smoker (n = 403)	173 (42.9)	185 (45.9)	45 (11.2)
Susceptible (n = 96)	0 (0.0)	63 (65.6)	33 (34.4)
Boys			
Committed never smoker (n = 342)	123 (36.0)	149 (43.6)	70 (20.5)
Susceptible (n = 123)	0 (0.0)	63 (51.2)	60 (48.8)

Table 4

Adjusted ORs (with 95% CIs and *P* values) for experimentation at after 3 y with and without susceptibility included in the logistic regression model ($n = 964$)

Baseline characteristic	Follow-up experimentation			
	Without susceptibility		With susceptibility	
	OR (CI)	*P*	OR (CI)	*P*
Sex				
Female	1.00		1.00	
Male	1.79 (1.28–2.51)	0.001	1.74 (1.24–2.46)	0.002
Age at enrollment				
11 or 12 y	1.00		1.00	
13 y	2.38 (1.68–3.37)	0.000	2.23 (1.56–3.18)	0.000
Detentions in school				
None	1.00		1.00	
At least one	1.98 (1.39–2.82)	0.000	1.88 (1.32–2.70)	0.001
SSS in school				
High	1.00		1.00	
Low	1.45 (1.02–2.04)	0.037	1.32 (0.93–1.88)	0.121
Positive outcome expectations				
None	1.00		1.00	
Some	2.02 (1.45–2.82)	0.000	1.58 (1.11–2.25)	0.011
Household member smokers				
No	1.00		1.00	
Yes	1.98 (1.44–2.81)	0.000	1.93 (1.37–2.71)	0.000
Susceptibility				
No	—	—	2.61 (1.79–3.80)	
Yes	—	—		0.000
Hosmer-Lemeshow goodness of fit test (both models adjusted for parental education)		0.229		0.167

Table 5

Adjusted ORs (with 95% CIs and *P* values) for experimentation after 3 y stratified by baseline susceptibility status (*N* = 964)

Baseline characteristic	Follow-up experimentation			
	Committed never smokers (*n* = 745)		Susceptibles (*n* = 219)	
	OR (CI)	*P*	OR (CI)	*P*
Sex				
Female	1.00		1.00	
Male	1.86 (1.21–2.86)	0.005	1.70 (0.94–3.09)	0.081
Age at enrollment				
11 or 12 y	1.00		1.00	
13 y	1.91 (1.20–3.02)	0.006	3.03 (1.67–5.51)	0.000
Detentions in school				
None	1.00		1.00	
At least one	2.38 (1.52–3.72)	0.000	1.29 (0.71–2.35)	0.410
SSS in school				
Low	1.00		1.00	
High	1.41 (0.92–2.17)	0.118	1.14 (0.61–2.15)	0.677
Positive outcome expectations				
None	1.00		1.00	
Some	2.28 (1.48–3.49)	0.000	0.74 (0.40–1.37)	0.337
Householder smokers				
No	1.00		1.00	
Yes	2.03 (1.32–3.10)	0.001	1.89 (1.06–3.38)	0.031
Hosmer-Lemeshow goodness of fit test (both models adjusted for parental education)		0.137		0.517