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Longitudinal Effects of Hostility, Depression, and Bullying on Adolescent Smoking Initiation

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A B S T R A C T

Purpose: The present study examined the associations between smoking initiation and, hostility, depressive symptoms, and bullying (bullies and bully-victims) among a culturally diverse sample of 1,771 adolescents who reported never having smoked at baseline.

Methods: Data were obtained from a longitudinal school-based experimental trial of smoking prevention programs in Southern California. Annual survey was performed for students of the sixth, seventh, and eighth grades. All students in the 24 participating schools were invited to participate in the study during the sixth grade.

Results: The risk of smoking initiation was significantly higher among students who scored higher on hostility and depressive symptoms, and were bully-victims.

Conclusion: The findings suggest that tobacco prevention programs should include strategies for managing hostile feelings and negative effect as part of the curriculum. In addition, it might be helpful to identify youth who score high on these psychosocial factors and teach them skills to handle interpersonal conflict and negative feelings to prevent their involvement in substance use.

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Numerous studies have identified risk factors associated with smoking onset, with the goal of developing effective tobacco control programs. Smoking is not randomly distributed across the population [1,2]. Psychological and behavioral factors, along with intrapersonal elements including genetic makeup [3–5], contribute to the cause of smoking onset. Adolescents with psychosocial characteristics, such as hostility and depressive symptoms, as well as those who behave aggressively (e.g., bullying), are especially vulnerable to smoking [6–8]. However, there is limited research that examines the correlation of these factors with smoking initiation among culturally diverse early adolescents, particularly among Asian American and Hispanic/Latino youth. These are the two largest and fastest growing ethnic

groups in Southern California. To fill the research gap, we collected a sample that included a high percentage of these two ethnic groups, and assessed psychosocial characteristics during the sixth grade, when smoking prevalence is generally low. We then examined smoking behavior during the seventh and the eighth grades, when successively more adolescents initiate smoking.

Hostility, Depressive Symptoms, and Bullying

Hostility is defined as having negative beliefs and suspicion about others, such as cynicism and mistrust. It is characterized by negative effect toward others [9]. Hostility is associated with stress vulnerability, poor coping, and externalizing behaviors such as bullying, arguing, and aggression [10,11]. Additionally, it is also related to internalizing behaviors, such as withdrawal, anxiety, and depression [12]. Adolescents who are depressed are at an increased risk for hostility and aggressive behavior because

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they attend selectively to the most negative features of events [13,14]. Although previous research has indicated that hostility, depression, and aggression are independently associated with unhealthy behaviors, including smoking, only a few have examined the effect of these psychosocial characteristics and their possible joint influence on adolescent smoking initiation.

Hostility and Adolescent Smoking

Hostility has been associated with higher smoking rates in both cross-sectional and longitudinal studies [11,15]. A longitudinal study of more than 4,700 individuals reported that the possibility of high-hostile students to take up smoking and continue to be smokers even 20 years later was more as compared with the low-hostile students [16]. This suggests that tobacco might be used to reduce tension and distress. The frequent experience of intense anger, particularly when undergoing evaluation, has been associated with adolescent smoking, in that adolescents who have difficulty controlling negative affect tend to use smoking as a coping mechanism [17].

Depressive Symptoms and Adolescent Smoking

Depression and depressive symptoms have been identified as important determinants of adolescent smoking [18,19]. Depressed adolescents are more likely to initiate smoking than their less depressed counterparts; however, there is still controversy about the direction of causality in the depression-smoking relationship because smoking is also associated with an increased risk of subsequent depression [20,21]. Some studies suggested that smoking might develop in an attempt to cope with psychological distress, and that depressive symptoms can leave adolescents more vulnerable to peer smoking influences [22,23]. Other research has shown that depressive symptoms grow worse over time [24]. A study examining the relationship between cigarette smoking and depressive symptoms in a longitudinal sample of 688 adolescents over 13 years showed that a history of earlier cigarette smoking in adolescence predicts depressive symptoms and smoking in the late twenties [25].

According to a published data review that searched through six major databases, 47 of 57 studies showed significant associations between smoking and depression [26]. However, these significant relationships might either be spurious or unrelated to depression because a substantial number of the studies did not adjust for confounders or did not use validated instruments to measure depression. Additionally, although the relationship is causal, its direction still remains controversial. Several possible relationships were suggested: (a) depression causes smoking, (b) smoking causes depression, (c) there is a bidirectional relationship between smoking and depression, and (d) smoking and depression co-occur due to confounders. Given the existing controversy, it is necessary to conduct longitudinal research to gain a better understanding of the relationships between adolescent depressive symptoms and smoking initiation.

Bullies, Bully-victims, and Adolescent Smoking

Smoking among adolescents has been associated with bullying [27,28]. High levels of bullying at baseline, as well as hyperactivity and somatic complaints, have been associated with smoking initiation among adolescents 15 months later [6]. Bullies are students who act aggressively toward specific students on a regular basis. Bully-victims (a subset of bullies who have

also been victimized) have higher rates of smoking as compared with other students [29]. Bully-victims might be particularly at risk for smoking initiation because of their high rates of emotional reactivity, academic difficulties, peer rejection, learning difficulties, and negative mood [30,31]. They might initiate smoking in an attempt to gain peer acceptance and/or to alleviate stress and depression.

The Present Study

Hostility, depression, and bullying have been associated with cigarette smoking among adolescents, but few studies have investigated multiple psychosocial characteristics and smoking initiation among culturally diverse groups, particularly among Asian American and Hispanic/Latino youth. Therefore, the goal of the present study is to examine the longitudinal effects of hostility, depressive symptoms, and bullying on smoking initiation in a culturally diverse adolescent population. This study addresses research gaps in several ways. The participants included a high percentage of Asian American and Hispanic/Latino adolescents, who are relatively understudied. For identifying predictors of initiation, we started examining smoking at a younger age when its prevalence is generally low. Investigation of longitudinal effects might provide useful information on whether the psychosocial characteristics increase the risk for initiating tobacco use. Finally, several studies have focused on the influence of depression on smoking initiation, but have not observed the hostility and bullying effects. We hypothesized that these psychosocial characteristics in sixth grade would be associated with smoking initiation by the eighth grade.

Methods

Sample

The participants involved in the study were students from a longitudinal school-based trial of two smoking prevention programs in a multicultural, urban population in Southern California. A description of the program and its outcomes is reported elsewhere [32]. Annual survey was performed for the students studying in the sixth, seventh, and eighth grades. All sixth grade students in the 24 participating schools were invited to participate in the study. Of the 4,427 students invited to participate, 3,358 (75.85%) provided active parental consent. Of those who consented, a total of 3,190 students completed the sixth grade survey, 2,822 students completed the seventh grade survey, and 2,561 students completed the eighth grade survey. A total of 2,292 students completed surveys for all three waves. Attrition rates were found to be lower among Asian Americans as compared with other ethnic groups in the sample ($p < .001$).

Because the primary outcome of this study was smoking initiation, we eliminated from the analyses any students who reported smoking at baseline ($n = 205$; 8.9% of the adolescents who completed all three assessments). There were 351 (15.31%) respondents with missing data on at least one variable in the final model, whom we excluded from the analysis. Thus, the analytical sample used in this study consisted of 1,771 adolescents. Of those, 675 (38%) reported as Hispanic/Latinos, 474 (27%) reported as Asian Americans, 199 (11%) as Caucasian, 27 (1.5%) as African Americans, 285 (16%) identified themselves as Multiethnic, and 111 (6%) reported as "others." The proportion initiating smoking during the observation period among those

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