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Adolescent Pathways to Adult Smoking: Ethnic Identity, Peer Substance Use, and Antisocial Behavior

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Abstract

African-Americans and Puerto Ricans were interviewed during adolescence, in their early twenties, and then again in their mid-twenties. Results indicated that earlier adolescent smoking, family conflict, and weak ethnic identity were significantly related to antisocial behavior, which in turn was related to associating with friends who smoked and/or used illegal drugs, and ultimately, to their own smoking. Results further indicate that early interventions in the development of tobacco use should focus on decreasing parental and adolescent smoking and parent-child conflict. If intervention occurs at a later time point, the emphasis should be on increasing ethnic identity and decreasing antisocial behavior.

Introduction

Tobacco use continues to be a major cause of health problems in the U.S. and imposes substantial costs on society, according to a report by the Centers for Disease Control.¹ Although tobacco use among adolescents has been declining since the mid 1990's, more than half of the young people in the U.S. have tried cigarettes by the 12th grade.² Therefore, the initiation and continuation of smoking into adulthood is still a cause for concern.³ The majority of prospective studies of smoking by adolescents and adults have examined White and ethnically undifferentiated samples. A better understanding of the earlier risk and protective factors that predict smoking among African-American and Puerto Rican adults is essential, given the substantial amount of smoking by these two groups of adults.

Our current study is unique in that it is the only longitudinal investigation designed to examine the interrelation of several earlier psychosocial variables associated with later smoking in an inner city sample of African-American and Puerto Rican adults, beginning in adolescence and extending to the middle twenties. Specifically, we examined prospectively the relationships of parental smoking, earlier parent-child conflict, late adolescent smoking, ethnic identity, antisocial behavior, and peer substance use to later smoking. The selection of these six variables is based on research demonstrating their correlation with smoking in the twenties. The selection of these variables also stems from our focus on tracing the relationship between early familial factors (parental smoking and parent-child conflict) to later behavioral factors (smoking and antisocial behavior) in an environmental context (e.g.,

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Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

peer substance use, ethnic identity) as predictors of smoking for participants in their twenties. We have explored this sequence in previous publications with studies of other samples and have found support for aspects of this developmental sequence outlined in Family Interactional Theory (FIT).⁴

Family Interactional Theory (FIT) is a multidimensional theory including variables from many domains; namely, parent personality, parent childrearing relations, ethnic identity, peer substance use, and antisocial behavior. FIT postulates a developmental sequence of distal and proximal domains. The distal domains consist of variables such as parental substance use, including smoking, childrearing variables, and the parent-child attachment relationship. These distal domains influence the proximal factors associated with substance use, such as adolescent personal attributes (attitudes and behavior) and peer group susceptibility and influences including peer group substance use. FIT emphasizes the significance of adolescent unconventional or antisocial behavior as a precursor to smoking and illegal drug use. Several postulated mechanisms that are operative in the pathways to substance use include parental identification, modeling of parent and peer behavior, and the attachment relationship between parent and child. Ethnic identification is postulated to affect adult smoking via antisocial behavior and peer substance use. Attachment is a key construct in FIT. Three kinds of attachment incorporated in FIT include attachment to: a) parents; b) peer group influences; and c) one's own ethnic background.

Despite the differences among samples we have studied, it is important to explore the generalizability of these findings. For example, there is a dearth of longitudinal studies of African-American and Puerto Rican community samples examining the impact of parent-child conflict on antisocial behavior in adults. However, in a cross-sectional study with a predominantly White sample, Forehand, Biggar, and Kotchick⁵ found that family risk factors, including mother-adolescent relationship problems, were associated with externalizing behaviors, such as criminal behaviors, in adults. Moreover, studies have shown that potential stressors within the family, such as a conflictual relationship with parents and authoritarian methods of parental control, have been associated with difficulties in psychosocial adjustment and behavioral problems among adolescents.^{6,7} There is a compelling need to identify earlier family factors that are associated with later antisocial behavior and tobacco use in African-American and Puerto Rican adults in their mid-twenties. In addition, parent-child conflict has been shown to be related to adolescent smoking,⁸ which in turn is related to adult smoking. Therefore, we have included measures of parent-child conflict.

Ethnic identity refers to an individual's knowledge of and identification with his/her own ethnic or cultural group. Several studies have revealed the importance of high ethnic identity as a protective factor with regard to smoking among African-Americans and Hispanics.^{9,10} Ethnic identity is associated with several measures of mental health and social adaptation.¹¹ Ethnic discrimination is a strong risk factor for adult violent behavior. Caldwell, Kohn-Wood, Schmeelk-Cone, Chavous, and Zimmerman¹² found that ethnic identity serves as a protective factor against engaging in violent acts. Feelings of pride and commitment to one's ethnicity were also found to be associated with nonviolent conflict resolution during adolescence.⁹ To date, however, relatively little research has been directed toward identifying aspects of ethnic identity and their relation to tobacco use.¹³ Parker and colleagues¹⁴ reported that ethnic identity serves as a protective factor against peer influences for smoking. We hypothesize that ethnic identity may play a significant role in insulating the participant from engaging in antisocial behavior, which, in turn, is related to protection against tobacco use.

The relationship between problem behaviors and adolescent smoking has been well established in the literature.¹⁵ Attributes such as risk-taking behavior, rebelliousness, and self-deviance have been shown to be associated with tobacco use among adolescents.¹⁶⁻¹⁸ Although little empirical longitudinal data exists with regard to adult African-Americans and Puerto Ricans in their mid twenties, we hypothesize that earlier antisocial behaviors are associated with smoking in adulthood.

A growing body of research indicates that antisocial problems may be related to associating with friends who smoke and use drugs. According to Engels, Vitaro, Blokland, de Kemp, and Scholte,¹⁹ individuals select friends with similar characteristics (assortative peer selection). Individuals who smoke tend to affiliate with other individuals who smoke.²⁰ Moreover, having friends who smoke may have an influence on the individual's smoking through modeling.²¹⁻²⁶ To the best of our knowledge, no previous investigators have assessed whether adolescent antisocial behavior is related to concurrent peer substance use in the early twenties, which, in turn, is related to smoking in inner-city African-Americans and Puerto Ricans, later in their twenties. Therefore, this issue was examined in the current study.

Several investigators have reported that there is both stability and change in smoking behavior over time.²⁷⁻²⁸ This relationship may be due to the physical effects of smoking. According to FIT, a family history of smoking is a precursor of the offspring's smoking. There is evidence that parental smoking predicts offspring smoking.²⁹⁻³⁰ Therefore, we include parental smoking in our developmental model. The relationship of parental smoking to adolescent smoking may be due to the operation of two mechanisms, namely, genetic factors and modeling.

There is evidence that adult African-Americans are more likely to smoke than adult Puerto Ricans.³¹ The literature also suggests that African-American and Puerto Rican men are more likely to smoke than females.³¹⁻³² Therefore, we decided to explore the role of these demographic factors in the pathways to tobacco use.

Data for the present study were drawn from an ongoing long-term longitudinal study of African-American and Puerto Rican individuals living in an inner city environment. Guided by an overarching developmental framework, we assessed the interrelation of antecedent measures of parent-child conflict, parental smoking, smoking during adolescence, ethnic identity, antisocial behavior, and peer substance use in the early twenties with later smoking by adults in their late twenties. Specifically, our conceptual model hypothesized that: 1) earlier parent-child conflict in adolescence is positively associated with antisocial behavior and peer substance use in the early twenties, and ultimately, with later smoking; 2) parent/child conflict and parental smoking have effects on earlier smoking in adolescence, which in turn is positively related to both later antisocial behavior the early twenties and later smoking; 3) low ethnic identity is related to antisocial behavior which in turn is correlated with peer substance use in the early twenties, which, in turn, is associated with later adult smoking; and 4) peer substance use in the twenties has a direct effect on later smoking.

Method

Sample

The sample for this study was drawn from a longitudinal study of African American and Puerto Rican young adults that began in 1990. At that time (T1) the participants were in the 7th, 8th, 9th, or 10th grade (mean age = 14 years), and attended schools serving the East Harlem area of New York City. At T1, 4% of the participants lived with his/her father (or father substitute), only 43% lived with his/her mother (or mother substitute), and 19% lived

with neither father (or father substitute) nor mother (nor mother substitute). The participants were interviewed again in 1994-1997 (T2; mean age = 19 years), in 2000-2001 (T3; mean age = 24 years), and in 2002-2003 (T4; mean age = 26 years).

The T4 sample (N = 475) consists of a random sub-sample of the participants who had previously taken part in the study. Only 2% of the participants who were approached refused to participate. We could not locate 4% of the sample. In addition, we compared those who had participated in previous waves (including T1) but did not participate at T4 with those who were interviewed at T4. We found no appreciable differences on our measures of tobacco use or the psychosocial variables. In addition, no ethnic differences separated those who participated at T4 and those who refused to participate, or whom we could not locate. When data was randomly missing, we used the full information maximum likelihood approach (FIML) to impute data.

The final sample of 475 participants (T4) was 49% male, 51% female, with an average age of 26.18 years (SD=1.41). The sample had 243 (51%) African American and 232 (49%) Puerto Rican respondents. The median educational level was 1 year of higher education after high school; 17% were employed in semi-skilled jobs (e.g., manual laborer), 11% in skilled jobs (e.g., mechanic), 31% in clerical positions, 14% had professional level jobs, and 27% were unemployed at the time of the interview. In addition, 16% of the sample was married and living together at the time of the interview. Finally, current smoking was reported by 39.4% of the sample. The percent of current smoking at T4 for males and females and for African Americans and Puerto Ricans appears in Table 1.

Procedure

Interviewers were matched to the participants with respect to ethnicity. Prior to conducting the study, we ran six focus groups for six months each (10 members per group) in order to make sure our measures were culturally relevant and linguistically appropriate. We also met with members of the Board of Education of the City of New York and principals and faculty members as well as parent groups in order to gain their input. A complete description of the procedures appear in Brook and Pahl.¹⁰

Measures

Parental smoking at T1—Both maternal and paternal smoking at T1 were assessed at the interview. The adolescents reported whether their parents smoked on a regular basis. The answer was rated as no (1) and yes (2). We used the mean scores of maternal and paternal smoking for the parental smoking measurement.

Parent-Child Conflict at T1 and T2—A latent variable of parent-child conflict at T1 and T2 was hypothesized. The measures consisted of four multi-item scales; namely, mother-child conflict at T1 and T2, and father-child conflict at T1 and T2. Conflictual relations with father (3 items; alpha = 0.78; e.g., “You seldom follow your father's advice unless he keeps after you.”³³), and conflictual relations with mother (3 items; alpha = 0.72; e.g., “You seldom follow your mother's advice unless she keeps after you.”³³) at each point in time.

Adolescent Smoking at T1 and T2—We used the mean score of frequencies of tobacco use at T1 and T2 as a manifest variable to assess adolescent smoking. Frequency of adolescent current cigarette smoking at T1 and T2, was assessed at the interview. The frequency was rated as none (1), a few cigarettes or less a week (2), 1-5 cigarettes a day (3), about half a pack a day (4), about one pack a day (5), and more than one pack a day (6). This measure is consistent with measures used in several national studies.³⁴

Peer Substance Use at T3—A latent variable of peer substance use at T3 was hypothesized. This construct was measured by three scales assessing the frequencies of peer smoking, peer marijuana use, and peer illegal drug use other than marijuana (e.g., “How many of your friends have ever smoked cigarettes on a regular basis?”⁴).

Antisocial Behavior at T3—A latent variable of antisocial behavior at T3 was based on the participants' reports of their own behavior. The following scales and examples of items were included: rebellion (3 items; alpha = 0.70; e.g., “When rules get in the way, you ignore them.”³⁵), risk-taking (7 items; alpha = 0.70; e.g., “You like to live dangerously.”³⁶), and self-deviance (13 items; alpha = 0.80; e.g., “How often have you gotten into a serious fight?”³⁷).

Ethnic identity at T3—At T3, a manifest variable of ethnic identity was assessed. The scale consisted of 5 items (alpha = 0.61; e.g., “You have spent much time learning about the culture and history of your ethnic or cultural group.”³⁸).

Smoking at T4—The dependent variable, frequency of adult smoking at T4, was assessed at the interview. The adults reported the frequency of their cigarette smoking during the past 30 days. The frequency was rated as none (0), a few cigarettes or less a week (1), 1-5 cigarettes a day (2), about half a pack a day (3), about one pack a day (4), about one and a half packs a day (5), and more than one and a half packs a day (6).

Data Analysis

Latent variable structural equation models were employed to examine the empirical validity of the proposed processes leading to smoking in adults. In order to account for the influences of the youths' gender, age, ethnicity, and school grade on the measurement and structural models, as suggested by Newcomb & Bentler,³⁹ we used partial covariance matrices as the input matrices. These matrices were created by statistically partialing out the effects of the demographic factors noted above on each of the original manifest variables. This strategy allowed us to statistically control for the effects of demographic variables without hypothesizing exactly where they influenced the model.

There was no missing data for adult tobacco use at T4. Less than 2% of the data were missing for each independent variable. We used the full information maximum likelihood (FIML) approach to impute missing data values.⁴⁰

The correlations among the variables derived from the covariance matrices are available from the authors. Maximum likelihood estimates of the model coefficients as discussed below were obtained by using LISREL VIII.⁴¹ To account for the non-normal distribution of the model variables, we used the Satorra-Bentler⁴² scaled statistic (S-B χ^2) as the test statistic for model evaluation, as recommended by Hu, Bentler and Kano.⁴³ We report three additional fit indices: (a) the LISREL goodness of fit index (GFI); (b) the root mean square error of approximation (RMSEA); and (c) Bentler's comparative fit index (CFI). For the GFI and CFI, values between .90 and 1.0 indicate that the model provides a good fit for the data, while the RMSEA should be below .06.⁴⁴

A total effects analysis was performed on each predictor of adult tobacco use. The total effects of a latent construct consist of the sum of its direct and indirect effects on the dependent variable. The *t*-statistics of the standardized total effects analyses were obtained.

Finally, we tested whether the pathways to adult smoking were the same for African-Americans and Puerto Ricans, and for males and females. For these analyses, we used the matrices without partialing out the demographic factors as the input matrices. For each pair

of comparisons, we first tested whether the measurement coefficients were the same across the groups. In the event the measurement coefficients were not statistically or clinically different across the groups, we then tested whether the structural coefficients (i.e., the pathways) were the same or different.

Results

As shown in Table 1, 39.34% of the participants were current smokers. There were no significant differences in smoking between African Americans and Puerto Ricans ($\chi^2(1) = 0.94, p=0.33$). Males reported greater smoking than females ($\chi^2(1) = 5.08, p=0.02$).

Using LISREL VIII, we tested the measurement model as well as the structural model, controlling for the youths' age, gender, and paternal educational level. All factor loadings were significantly different from zero ($p<0.001$). The findings show that the indicator variables were satisfactory measures of the latent constructs. The Satorra-Bentler chi-square was 152.62. The following fit indices were obtained: GFI=0.95; RMSEA=0.05; and Bentler's CFI=0.95. These results reflect a satisfactory model fit. For the structural model, standardized parameter estimates, as well as the associated t -statistics for the sample, are presented in Figure 1.

As noted in Figure 1, the data are consistent with the hypothesized model. More specifically, our findings suggest that: 1) Parent-child conflict (T1-T2) in adolescence and ethnic identity (T3) in the early twenties were positively associated with the participants' antisocial behavior (T3) ($t = 3.89$ and $t = 3.80$, respectively). Both parent-child conflict (T1-T2) and antisocial behavior (T3) were positively related to associating with drug-using peers (T3) ($t = 2.58$ and $t = 7.10$, respectively). Associating with drug-using peers (T3) in the early twenties, in turn, had a direct effect on the participants' tobacco use in adulthood (T4) ($t = 5.21$); 2) Parental smoking (T1) and parent-child conflict (T1 and T2) were positively related to the participants' tobacco use in adolescence (T1 and T2) ($t = 2.70$ and $t = 3.41$, respectively), which, in turn, was both directly ($t = 7.34$) and indirectly ($t = 2.43$, through T3 antisocial behavior and then associating with drug-using peers) related to their tobacco use in adulthood (T4).

An examination of the total effects of each latent and manifest variable estimated in the analysis of adult tobacco use at T4 helps in the interpretation of the structural coefficients. Table 2 presents the standardized total effects of the proposed latent/manifest variables on adult cigarette smoking at T4. The t values of the total effects of peer substance use, antisocial behavior, parent-child conflict, adolescent tobacco use, parental tobacco use, and ethnic identity on adult smoking were all statistically significant ($p<0.05$, based on a two-tailed test). Thus, our findings showed that peer substance use, antisocial behavior, parent-child conflict, adolescent tobacco use, parental tobacco use, and ethnic identity each had a significant total effect on adult cigarette smoking.

We next tested whether the structural models were the same for African-Americans and Puerto Ricans, and for males and females. To compare the African-American and Puerto Rican structural models, first we constrained the measurement model parameters and structural model parameters to be equal for both ethnic groups. We then allowed the measurement coefficients to differ for African-Americans and Puerto Ricans. The following differences in the measurement coefficients were statistically significant: peer illegal drug use on peer substance use [$\chi^2(1) = 6.28, p = 0.01$, larger standardized coefficient for African-Americans], rebellion on antisocial behavior [$\chi^2(1) = 5.01, p = 0.03$, larger standardized coefficient for Puerto Ricans], risk-taking on antisocial behavior [$\chi^2(1) = 5.14, p = 0.02$, larger standardized coefficient for Puerto Ricans], and conflictual relations with

father at T2 on parent-child conflict [$\chi^2 (1) = 11.24, p < 0.001$, larger standardized coefficient for Puerto Ricans]. While there were statistically significant differences in the measurement coefficients between African-Americans and Puerto Ricans, all of the coefficients were statistically significant within each group, and the differences across groups were not clinically meaningful. We then tested whether the structural coefficients differed for African-Americans and Puerto Ricans. The results showed that there were no statistically significant differences in the pathways between African Americans and Puerto Ricans [$\chi^2 (9) = 16.05, p = 0.07$]. Using the same procedure, we compared the male and female structural models. There was no indication of significant differences between the male and female adult samples on either the measurement parameters [$\chi^2 (7) = 8.07, p = 0.27$] or structural parameters [$\chi^2 (9) = 10.14, p = 0.34$]. Based on these findings, we concluded that the African-American and Puerto Rican structural models did not appear to be structurally different. Similarly, the male and female models were not structurally different.

Discussion

The present study is unique and extends previous research in two main ways. First, this study is based on school-based sample drawn from a longitudinal study of African-American and Puerto Rican adults living in the community in a metropolitan area, rather than on those attending treatment facilities. Second, we have traced some of the psychological pathways beginning in adolescence to smoking in adulthood, as shown in the developmental model presented in Figure 1.

The findings of the present study lend support to our major hypotheses regarding the pathways to adult smoking as presented in our developmental model. In accord with FIT, one of the major pathways suggests that greater parent-child conflict in adolescence is related to both antisocial behavior and peer substance use in the early twenties, which ultimately is associated with adult smoking. A second pathway demonstrates that the effect of low ethnic identity in the early twenties on adult smoking is mediated by antisocial behavior and peer substance use. The third pathway indicates that antisocial behavior has a direct effect on adult smoking. Finally, the fourth pathway indicates that parental smoking and parent-child conflict are related to adolescent smoking, which has a direct effect on adult smoking.

The findings of the present study indicate that there are no appreciable ethnic and gender differences in the pathways to smoking. Partial support for our findings are derived from the investigations of Griesler et al.⁴⁵ and Flay et al.⁴⁶ who noted that peer smoking predicted smoking across ethnic groups. In addition, the relationship between personal attributes (e.g., delinquency) and parental closeness and tobacco use have been found to be similar in different ethnic groups.⁴⁵⁻⁴⁷ Even though we did not find ethnic differences in the pathways to adult smoking, interventions for African-Americans and Puerto Ricans as well as for males and females might still benefit from being tailored for ethnicity or gender to make them more culturally and linguistically relevant.

To our knowledge, this is the first study to demonstrate that low ethnic identity in adolescence is associated with smoking among African-American and Puerto Rican adults in their mid-twenties. Individuals who score lower on our measures of ethnic identity may be less knowledgeable and therefore less aware of the consequences of engaging in antisocial behavior and associating with substance using peers related to smoking. In a related vein, Marsiglia, Kulis, and Hecht⁴⁸ reported that ethnic identity was inversely related to drug use. Our findings add to those of Yasui et al.,¹¹ who reported that stronger ethnic identity is related to both mental health and social adaptation. In addition, our results add to the literature by indicating that the effect of low ethnic identity on smoking is mediated by

antisocial behavior and associating with peers who use drugs. From a clinical perspective, the findings provide support for: a) strengthening one's attachment to their ethnic group; and b) cultural enhancement interventions for ethnic minorities.⁴⁹

As noted above, the effect of parent-child conflict on adult smoking was mediated by adolescent antisocial behavior. Our developmental model showed that an earlier conflictual parent-child relationship increased the likelihood of later adult antisocial behavior (e.g., delinquency). This finding is consistent with Family Interactional Theory,⁴ and with research on community samples, including racial and ethnic minority samples.^{6,50} In accordance with Family Interactional Theory, aspects of a weak parent-child bond, including greater parent-child conflict, may loosen the ties to conventional authority that the parents represent, and predispose the adolescent toward rebelliousness and delinquent behavior.⁴ The implication here is that clinically, one might strengthen the parent-child attachment relationship which might lead to less parent-child conflict. Related to this, strengthening the individual's identity with prosocial peer groups may have beneficial effects.

Numerous investigators have indicated that personality attributes that reflect a lack of behavioral control during adolescence/adulthood, including delinquency, tolerance of deviance, and rebelliousness, also predict smoking in adulthood.^{15,30,51} Our findings add to the literature by demonstrating that such characteristics are mediated by peer substance use, which in turn is directly related to smoking.

Peer substance use in adulthood had a direct effect on adult tobacco use. Adults whose friends used tobacco, marijuana, and/or other illicit drugs were themselves more likely to engage in these behaviors. These findings are in accordance with the literature.^{46,52,53} Specifically, our model showed that adults who are deviance-prone were more likely to select friends who used drugs more often. Although the mechanisms underlying the relationship between a drug-using peer group in adulthood and adult smoking have not been clearly established, one possible explanation is that peer behaviors result in the adult's perception that smoking is a normative behavior.¹⁵ Peer influences on smoking may also include a social learning process in which members of the peer group model and reinforce smoking.⁴ Overall, our findings highlight the importance of decreasing the individual's attachment to substance using peer groups.

There is some evidence that adolescents whose parents smoke are more likely to smoke themselves.^{29,30} In line with these findings, our research indicates that parental influences (both maternal and paternal models of smoking) are related to adolescent smoking, which in turn, is directly related to later adult smoking. These findings are consonant with those aspects of social learning theory that focus on imitation of the behavior of important models in the individual's life.^{29,54} Genetic factors, which were not examined in this study, might also contribute to the relationship of parental smoking to adolescent smoking and later adult smoking.

The analyses of unique effects provide additional insights into the relative contributions of parental smoking, adolescent smoking, earlier low ethnic identity, conflictual relations with parents, antisocial behavior and peer substance use as they relate to later smoking by adults in their twenties. The results of the total effect analyses emphasize the significance of each of the domains. Moreover, the results of the total effects analyses also suggest that adolescent smoking and antisocial behavior had the greatest effects on later smoking, followed by peer substance use and conflictual relations with parents.

Limitations

The results reported here must be interpreted in light of several limitations. First, adult smoking probably is not only related to prior parental and adolescent smoking, antisocial behavior, peer substance use, parent-child conflict, and low ethnic identity, but also to dimensions not included in this study, such as broader cultural, genetic, and other factors (e.g., parental tobacco and antisocial behavior, tobacco use during pregnancy, early adolescent peer substance use, stressful life events, and whether the participants were a product of mixed marriages).⁵⁵⁻⁵⁶ Future studies should be conducted to gain a more comprehensive understanding of the many factors associated with smoking. Second, our model can only present the temporal relations among the latent variables studied, but cannot prove causality. However, the longitudinal analysis of these latent variables using Structural Equation Modeling suggests the possibility of a causal ordering.

Conclusions and Implications

The results of this study add to the literature by examining the interrelationship of several longitudinal predictors of cigarette smoking in African-American and Puerto Rican adults. Of particular note is the fact that earlier parental smoking and parent-child conflict had indirect paths to adult smoking in the mid-twenties, suggesting the extent and complexity of the parents' roles in their adult children's smoking. From a clinical perspective, a reduction in parental smoking and parent-child conflict may be related to a reduction in peer substance use, antisocial behavior, and adult smoking. The findings also highlight the significance of early intervention with adolescents who smoke. To our knowledge, this is the first longitudinal investigation to specifically assess the effects of low ethnic identity, parental and adolescent smoking, aspects of parent-child conflict, antisocial behavior, and peer substance use on smoking in a sample of inter-city African-American and Puerto Rican adults. In sum, the findings provide support for those interventions that target all of these areas as well as their mediators and moderators in smoking prevention and cessation programs.⁵⁷⁻⁵⁸

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Figure 1.

Obtained Model: Standardized Pathways (*t*-statistic) to Smoking.

Note: 1. GFI=0.95, RMSEA=0.05, and CFI=0.95;

2. * $p < 0.05$; ** $p < 0.001$;

3. T1=Time 1 (Mean Age =14); T2=Time 2 (Mean Age =19); T3=Time 3 (Mean Age=24);

T4=Time 4 (Mean Age=26);

4. Age, gender, ethnicity, and school grade were statistically controlled.

Table 1
Frequency of Cigarette Smoking in the Past 30 days by Ethnic Groups and Gender at Time 4

	Whole Sample (N=475) %	A.A. (N=243) %	P.R. (N=232) %	Male (N=234) %	Female (N=241) %
None	60.63	63.79	57.33	56.41	64.73
A few cigarettes or less a week	5.26	4.12	6.47	4.27	6.22
1-5 cigarettes a day	14.53	13.99	15.09	15.38	13.69
About half pack a day	12.42	11.93	12.93	16.67	8.30
About one pack a day	4.84	3.29	6.47	4.27	5.39
About one and a half packs a day	0.42	0.41	0.43	0.00	0.83
More than one and a half packs a day	1.89	2.47	1.29	2.99	0.83

Note: A.A.=African Americans; P.R.=Puerto Ricans

Table 2

Standardized Total Effects (*t*-statistic) of Parental Smoking, Earlier Smoking, Peer Substance Use, Antisocial Behavior, Parent-Child Conflict, and Low Ethnic identity on Adult Cigarette Smoking.

Latent and Manifest Variables	Adult Cigarette Smoking (T4) Standardized Total Effects (<i>t</i> -statistic)
Peer Substance Use (T3)	0.23 (5.21) ***
Antisocial Behavior (T3)	0.13 (4.31) ***
Low Ethnic Identity (T3)	0.03 (3.17) **
Cigarette Smoking (T2)	0.39 (7.55) ***
Parent-Child Conflict (T1-T2)	0.21 (4.51) ***
Parental Smoking (T1)	0.05 (2.50) *

T1=Time 1 (Mean Age=14); T2=Time 2 (Mean Age=19); T3=Time 3 (Mean Age 24); T4=Time 4 (Mean Age 26); Age, gender, ethnicity, and school grade were statistically controlled.

*
p<0.05;

**
p<0.01;

p<0.001;