

## Original Investigation

# Longitudinal precursors of young adult light smoking among African Americans and Puerto Ricans

Pebbles Fagan, Judith S. Brook, Elizabeth Rubenstone, Chenshu Zhang, & David W. Brook

## Abstract

**Introduction:** Studies have consistently documented the importance of examining light smoking among African American and Latino adolescent and adult smokers. Little is known, however, about the psychosocial antecedents of adolescent and young adult light smoking in these racial/ethnic minority groups.

**Methods:** This study examined the longitudinal interrelationships and pathways leading to light smoking among African Americans ( $n=288$ ) and Puerto Ricans ( $n=262$ ). Specifically, we assessed parental factors, perceived discrimination, peer smoking, personality factors, and light smoking in late adolescence as precursors to light smoking among African American and Puerto Rican young adults.

**Results:** The results of structural equation modeling showed that a history of greater parental smoking, less parental educational attainment, and more perceived discrimination were each mediated by peer smoking and the youth's maladaptive personality and behavior in late adolescence. The youth's maladaptive personality and behavioral characteristics and light smoking in late adolescence, in turn, predicted light smoking in young adulthood. There were no significant racial/ethnic or gender differences in the pathways to light smoking.

**Discussion:** Findings highlight the longitudinal pathways to light smoking among African Americans and Puerto Ricans. The results suggest that effective prevention and cessation programs must address peer and parental social influences, perceived discrimination, and especially, emotional and behavioral problems in late adolescence to reduce light smoking among late adolescents and young adults in these racial/ethnic groups.

## Introduction

Although light smokers may perceive themselves as invulnerable to the adverse consequences of smoking (Ayanian & Cleary, 1999), research findings suggest that this perception is false. Light smoking has been associated with nicotine dependence (Okuyemi et al., 2007), substance use (King & Epstein, 2005), and numerous cardiovascular (Barua et al., 2002) and pulmonary diseases (Gold et al., 1996), including increased rates of cancers, especially of the lung (Bjartveit & Tverdal, 2005).

Studies have consistently documented light smoking among African American and Latino adolescent (Everett et al., 1999; Wallace et al., 2002; White, Nagin, Replogle, & Stouthamer-Loeber, 2004) and adult (Haiman et al., 2006; Lawrence, Fagan, Backlinger, Gibson, & Hartman, 2007; U.S. Department of Health and Human Services, 1998; Winkleby, Schooler, Kraemer, Lin, & Fortmann, 1995) smokers, and African Americans have disproportionately suffered the disease burden of tobacco use, despite their light smoking. Lawrence et al. (2007), who reported data from the Tobacco Use Supplement of the Current Population Survey, found that among young adult smokers, 63.0% of Latinos, 52.4% of African Americans, and 28.9% of Whites smoked less than 10 cigarettes daily. Data from the National Survey on Drug Use and Health showed comparable findings.

Observations of light smoking among adolescents and young adults suggest a need to further investigate specific psychosocial factors that may explain this social phenomenon or norm among African Americans and Puerto Ricans. Most studies to date have investigated the psychosocial antecedents of smoking with little regard for the frequency and intensity of smoking or the heterogeneity in smoking trajectories among adolescent minority racial/ethnic groups. For example, White et al. (2004) found that at age 10, African Americans show

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similar mean cigarettes smoked per day as White youth, but by age 11, the number of cigarettes per day diverges, such that the mean number of cigarettes smoked by Whites up to age 25 remains substantially higher than for African Americans. To our knowledge, few studies have either accounted for the quantitative differences in daily smoking among minority racial/ethnic groups or examined the longitudinal psychosocial antecedents of the light smoking phenomenon in order to better understand the intergenerational nature of a behavior that occurs in adolescence and adulthood among African American and Latino smokers. Therefore, an examination of the factors related to light smoking among minorities in this age cohort is imperative to inform effective prevention and cessation programs.

To address this issue, the present longitudinal study examined the pathways of several psychosocial and demographic variables leading to light smoking ( $\leq 10$  cigarettes/day, our dependent variable) among young adult African Americans and Puerto Ricans. We assessed social influences, education, perceived discrimination, maladjustment, and late adolescent light smoking as precursors to light smoking in young adulthood. Due to the current dearth of psychosocial research on light smoking and our poor understanding of smoking trajectories among light smokers, we specifically selected domains that have been found to predict regular smoking (and other problem behaviors) in youth.

### Parental smoking

Our study is informed by family interactional theory (FIT; Brook, Brook, Gordon, Whiteman, & Cohen, 1990), which posits that parental substance use, including smoking, is associated with smoking and other problem behaviors in the offspring. In addition, and consistent with FIT, parental smoking also may have a direct effect on offspring smoking due to identification, modeling, or genetic effects. Support for this theory has been reported by several researchers (e.g., Fagan, Brook, Rubenstone, & Zhang, 2005; Hill, Hawkins, Catalano, Abbott, & Guo, 2005). Chassin, Presson, Todd, Rose, and Sherman (1998), for instance, showed that maternal smoking was linked both directly with the child's smoking and indirectly through the mediation of parenting practices and the youth's peers' smoking.

### Parental educational attainment

Several investigators have found an association between low educational attainment and smoking in children (Johnston, O'Malley, Bachman, & Schulenberg, 2005) and in adults (Gilman et al., 2008; Watson et al., 2003). Research has shown that lower parental education is related to maladaptive outcomes in the offspring (e.g., Eley et al., 2004; Huurre, Aro, & Rahkonen, 2003). Parental educational attainment may be one index of socioeconomic status, which extensive research has shown to be inversely related to offspring smoking in adolescence and adulthood (Fagan et al., 2005). For example, Fergusson, Horwood, Boden, and Jenkin (2007) found that less maternal and paternal education predicted offspring conduct problems, peer smoking, and less offspring educational achievement in adolescence, which in turn predicted offspring smoking at age 25.

### Youth perceived discrimination

Research suggests that discrimination experiences (i.e., a process by which members of a group are treated differently because of their group membership; Jary & Jary, 1995) are related to both

increased psychological distress and smoking in racial/ethnic minority adolescents and adults (Guthrie, Young, Williams, Boyd, & Kintner, 2002; Landrine & Klonoff, 2000). Discrimination has been reported to be a major stressor (Priest, 1991), and results from the CARDIA study show that African Americans experiencing racial discrimination in several domains had nearly twice the odds of reporting current tobacco use compared with those who reported experiencing no discrimination (Borrell et al., 2007). As we are unaware of any studies on discrimination and light smoking, our hypothesis regarding discrimination was based on investigations of heavier smoking.

### Peer smoking

Numerous studies have shown that peer smoking is a powerful predictor of adolescent smoking and that smoking is associated with emotional and behavioral problems in youth (e.g., Beal, Ausiello, & Perrin, 2001; Hoffman, Sussman, Unger, & Valente, 2006). Studies to date have not examined the influence of light smoking peers on light smoking among other members of the peer group.

### Youth maladaptive personality and behavior

In addition, according to FIT (Brook, Whiteman, Czeisler, Shapiro, & Cohen, 1997; Brook et al., 1990) as well as other research (e.g., Ferdinand, Blüm, & Verhulst, 2001), youth who are more unconventional (e.g., rebellious) or have greater psychological problems (e.g., depression) are at risk for cigarette smoking. In a study of younger and older adolescents, for example, Brook, Cohen, and Jaeger (1998) showed that unconventionality was a key determinant of both initial and increased tobacco use and that intrapersonal distress was the most powerful predictor of smoking initiation.

### Light smoking in late adolescence

Light smoking may represent a transitional phase during escalation or diminution of smoking or a stable behavior over time (Okuyemi et al., 2002). Hennrikus, Jeffery, and Lando (1996), for instance, found that 42% of light smokers (1–10 cigarettes daily) were still light smokers at 2-year follow-up.

Based on the preceding research and the need to better understand the light smoking phenomenon among African Americans and Puerto Ricans, this study examined the following hypothesized pathways: (a) a history of parental smoking, less parental educational attainment, and perceived discrimination are mediated by both peer smoking and the youth's maladaptive personality and behavior in late adolescence; (b) an association exists between peer smoking and the youth's maladaptive characteristics; (c) a history of parental smoking, peer smoking, and the youth's maladaptive personality and behavior are linked with light smoking in late adolescence; and (d) light smoking in late adolescence predicts light smoking in young adulthood. We also explored ethnic and gender differences in young adult light smoking.

## Methods

The sample consisted of a subset of male and female African American and Puerto Rican young adult light smokers and non-smokers ( $n = 550$ ), who are participants in an ongoing longitudinal

study of substance use in ethnic minorities in New York City ( $n=660$ ). Participants were originally recruited from junior high schools (and one high school) in East Harlem, New York, when they were early adolescents (time 1). For a more detailed description of the sample, please see Marcus, Pahl, Ning, and Brook (2007). Data for the present analysis were collected in 1990 (time 1; T1), 1994–1996 (time 2; T2), and 2000–2001 (time 3; T3). For the present analysis, we selected participants who indicated at T2 or T3 that they were light smokers (i.e., smoked 10 or fewer cigarettes per day) or nonsmokers. Some 7% of the 660 participants in the ongoing longitudinal study, who indicated that they smoked at least 11 cigarettes daily at either T2 and/or T3, were excluded from the present analysis. The demographic characteristics of the sample for the present analysis are shown in Table 1. We found only one significant difference when we compared youth included in this study and those who were not retained at T3 on each of the psychosocial variables as well as light smoking at T2. Participants in the present analysis reported more perceived discrimination at T2 than nonretained youth ( $t = 2.77, p \leq .01$ ), which may be a chance finding. The study was approved by the institutional review board of the New York University School of Medicine (our current affiliation) the Mount Sinai School of Medicine (our prior affiliation).

## Procedure

Data at T1 were collected in school classroom settings by researchers. At T1, participants both listened to and read the questions, via personal tape players and printed questionnaires,

respectively, and then marked their answers on the questionnaires. At T2 and T3, data were collected via individual structured interviews, which were conducted in private and in person by trained interviewers. The interviewer read each question out loud and circled the answer provided by the participant. Each participant was given a copy of the questionnaire to follow along. Informed consent was obtained from all participants. A Certificate of Confidentiality also was obtained for the study from the National Institute on Drug Abuse of the National Institutes of Health.

## Measures

The independent variables consisted of three latent constructs, parental educational attainment, a history of parental smoking, and the youth's maladaptive personality and behavior, as well as three manifest variables, the youth's perceived discrimination, peer smoking, and light smoking in late adolescence. The dependent variable, young adult light smoking, also was a manifest variable. These measures were based on the youth's report in late adolescence (T2), except for parental education, which the youth reported in early adolescence (T1), and light smoking at T3, which participants reported in young adulthood.

Table 2 shows the scales used for the independent variables, as well as their respective source, number of items, sample item, response range, and Cronbach's alpha (where appropriate). The youth were asked the parental smoking questions separately for mother and father. The history of parental smoking latent construct consisted of the separate, continuous manifest variables of the mother's and the father's smoking. Similarly, the youth were asked about both the mother's and the father's education, which were treated as separate, continuous manifest variables that comprised the parental educational attainment construct. Youth who did not have either a biological mother or a stepmother, or a biological father or a stepfather, were instructed to select and respond about a mother or father figure, for example, a grandmother or an uncle.

For the dependent variable, the young adults were asked at T3 how many cigarettes a day they (currently) smoke. The response range was (1) none, (2) a few cigarettes or less a week, (3) 1–5 cigarettes a day, (4) about half a pack a day, (5) about one pack a day, (6) about one and a half packs a day, and (7) more than one and a half packs a day. Light smokers were defined as young adults who indicated that they smoked 10 or fewer cigarettes per day (i.e., those who indicated responses 2, 3, or 4). This cutoff was selected based on previous empirical studies (e.g., Hennrikus et al., 1996; Okuyemi et al., 2007; Webb & Carey, 2008) as well as epidemiological surveys (e.g., Everett et al., 1999; Lawrence et al., 2007; Substance Abuse and Mental Health Services Administration, 2006).

## Data analyses

Latent variable structural equation models (SEM) were used to examine the empirical credibility of the proposed processes of our hypothesized model. The correlations among the variables derived from the covariance matrices are available from the authors upon request. Maximum likelihood estimates of the model coefficients, as discussed below, were obtained using LISREL 8 (Jöreskog & Sörbom, 1996). To account for the nonnormal distribution of the model variables, we used the Satorra–Bentler

**Table 1. Sample characteristics ( $n=550$ )**

Characteristic	Values <sup>a</sup>
Mean age	
Time 1 (T1)	14 years ( $SD = 1.32$ )
Time 2 (T2)	19 years ( $SD = 1.53$ )
Time 3 (T3)	24 years ( $SD = 1.37$ )
Gender	
Male	47% ( $n = 260$ )
Ethnicity	
African American	52% ( $n = 288$ )
Puerto Rican	48% ( $n = 262$ )
Educational status (T3; %)	
Attended or finished college	52
Obtained a business or technical school degree	6
Completed high school	26
Did not finish high school	15
Other	1
Occupational status (T3; %)	
Professionals or store owners	15
Clerical or sales positions	34
Skilled labor	8
Semiskilled workers or less	22
Unemployed	20
Other	1
Marital status (T3; %)	
Married and living together	14
Married but separated	1
Cohabiting	20
Living alone (%)	65

Note. <sup>a</sup>Values are percentages or means with *SDs*.

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**Table 2. Independent variable scales, sources, number of items, sample items, response ranges, and Cronbach's alphas**

Scale (source)	Number of items	Sample item	Response options	Cronbach's Alpha
Parental smoking <sup>a</sup> (Brook et al., 1990)	2	What was the greatest number of cigarettes your mother (father) ever smoked?	1. None 2. A few cigarettes or less a week 3. 1–5 cigarettes a day 4. About half a pack a day 5. About one pack a day 6. More than one pack a day	N/A
Parental educational attainment (Fagan et al., 2005)	2	How far in school did your mother (father) go?	1. Completed grade school or less 2. Some high school 3. Completed high school 4. Technical, nursing or business school after high school 5. Some college 6. Completed college	N/A
Perceived discrimination (original)	3	How much have you experienced discrimination by the police or security guards?	1. Not at all 2. A little 3. Somewhat 4. Very much	.64
Peer smoking	1	How many of your friends smoke cigarettes on a regular basis?		N/A
Late adolescent maladaptive personality and behavior				
Depressive symptoms (modified version of the Hopkins Symptom Checklist; Derogatis, Lipman, Richels, Uhlenhuth, & Covi, 1974)	2	You sometimes feel unhappy, sad, and depressed.	1. Completely false 2. Mostly false 3. Mostly true 4. Completely true	.70
Rebelliousness (Smith & Fogg, 1979)	3	When rules get in the way, you ignore them.	1. Completely false 2. Mostly false 3. Mostly true 4. Completely true	.63
Deviance (Gold, 1966)	10	During the past 5 years, how often have you gotten into a serious fight?	1. Never 2. Once 3. Twice 4. three or four times 5. five or more times	.84
School achievement <sup>b</sup> (Brook et al., 1990)	9	(Number of) years of school you hope you will complete.	1. Leave before graduating high school 2. Finish high school only 3. Technical, nursing or business school after high school 4. Some college but less than 4 years 5. Graduate from a 4-year college 6. Get a master's, law or doctorate degree	.80
Late adolescent light smoking	1	How many cigarettes a day do you (currently) smoke?	1. None 2. A few cigarettes a week or less 3. 1–5 cigarettes a day 4. About half a pack a day 5. About one pack a day 6. About one and a half packs a day 7. More than one and a half packs a day	N/A

Note. <sup>a</sup>Parental smokers were defined as having smoked “a few cigarettes or less a week” to “more than one pack a day” according to the youth's report.

<sup>b</sup>Response options varied for the additional items in this scale.

scaled statistic (S-B  $\chi^2$ ) (Satorra & Bentler, 1988) as the test statistic for model evaluation, as recommended by Hu, Bentler, and Kano (1992). We chose several fit indices to assess the fit of the models: (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 the CFI, values between 0.90 and 1.0 indicate that the model provides a good fit for the data; the RMSEA should be below .06 (Kelloway,

1998). A total effects analysis was performed on each predictor of young adult light smoking. 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 (STEs) analyses were obtained (Table 3). Finally, we tested whether the pathways to young adult light smoking were the same for African Americans and Puerto Ricans and for males and females in these racial/ethnic groups.

## Results

The present study (*n*=550) consisted of African American (*n*=288) and Latino (*n*=262) light smokers and nonsmokers. At T3, 31.3% (*n*=172) of the sample were light smokers (i.e., 10 or fewer cigarettes per day), comprising 30.9% (*n*=89) of the African American and 31.7% (*n*=83) of the Latino participants. Also at T3, 68.7% (*n*=378) of participants were nonsmokers, consisting of 69.1% of the African Americans and 68.3% of the Latinos, who indicated at T3 that they did not smoke. There were no racial/ethnic differences in light smoking at T3 (*t* = .49, *p* = .62). Males reported more light smoking than females at T3 (*t* = 2.45, *p* < .05).

Using LISREL 8, we tested the measurement model as well as the structural model. All factor loadings were significant (*p* < .001). The findings showed that the indicator variables were satisfactory measures of the latent constructs. The S-B  $\chi^2$  (*df*=46) was 121.75. The following fit indices were obtained: GFI=0.96, RMSEA=0.055, and Bentler's CFI=0.94. These results reflect a satisfactory model fit. For the structural model, standardized parameter estimates, as well as associated *t* statistics for the sample, are presented in Figure 1.

The empirical model revealed 12 statistically significant pathways ( $\alpha \leq .05$ ; two-tailed test), which can be summarized as follows:

1. A history of parental smoking was associated with peer smoking, the youth's maladaptive personality and behavior, and late adolescent light smoking.
2. Less parental educational attainment was linked with a history of parental smoking and with peer smoking.
3. Perceived discrimination was related to both peer smoking and the youth's maladaptive personality and behavior.
4. Peer smoking was related to the youth's maladaptive characteristics and to light smoking in late adolescence.
5. The youth's maladaptive personality and behavior were linked with light smoking in late adolescence and with young adult light smoking.
6. There was stability of light smoking from late adolescence to young adulthood.

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, we first constrained the measurement model parameters and structural model parameters to be equal for both racial/ethnic groups. We then allowed the measurement coefficients to differ for African Americans and Puerto Ricans. While there were statistically significant differences in the measurement coefficients between African Americans and Puerto Ricans,  $\chi^2(5) = 23.71$ , *p* < .001, all the coefficients were statistically significant within each group, and the differences across groups were not clinically meaningful. We then allowed the structural coefficients to differ for African Americans and Puerto Ricans. The results showed that none of the differences in the structural coefficients were statistically significant,  $\chi^2(12) = 8.69$ , *p* > .05. Using the same procedure, we compared the male and female structural models. Although we found statistically significant differences in the measurement coefficients between males and females,  $\chi^2(5) = 34.77$ , *p* < .001, all the coefficients were statistically significant within each group, and the differences across groups were not clinically meaningful. There was no indication of significant differences between the male and female samples on the structural parameters,  $\chi^2(12) = 17.88$ ,

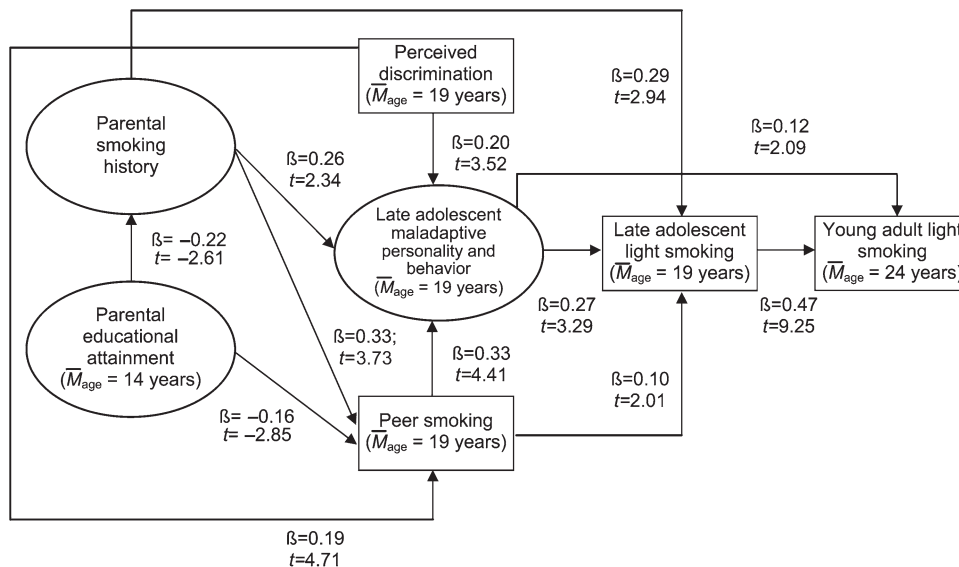


Figure 1. Obtained structural equation model: Standardized pathways (*t* statistic) to light smoking in young adulthood (*n*=550).

**Table 3. Standardized total effects and *t* test statistics**

Independent variable	Young adult light smoking (T3)
Parental education (T1)	-.07 ( <i>t</i> = -3.22)*
History of parental smoking (T2)	.24 ( <i>t</i> = 3.96)*
Perceived discrimination (T2)	.07 ( <i>t</i> = 3.54)*
Peer group smoking (T2)	.13 ( <i>t</i> = 4.15)*
Youth maladaptive personality and behavior (T2)	.24 ( <i>t</i> = 3.64)*
Late adolescent light smoking (T2)	.47 ( <i>t</i> = 9.25)*

Note. \**p* < .001 (two-tailed test).

*p* > .05. Based on these findings, we concluded that the African American and Puerto Rican models, and the male and female models, do not appear to be structurally different.

Table 3 shows that the STE of each of the earlier constructs on T3 young adult light smoking was statistically significant. Light smoking in late adolescence (T2) had the largest STE on light smoking in young adulthood ( $\beta = 0.47$ ,  $t = 9.25$ ), followed by a history of parental smoking ( $\beta = 0.24$ ,  $t = 3.96$ ) and the youth's maladjustment ( $\beta = 0.24$ ,  $t = 3.64$ ).

## Discussion

This is the first study to demonstrate the pathways between both discrimination and problem behaviors and the outcome, light smoking, in a longitudinal sample of African Americans and Puerto Ricans. These longitudinal data support our main hypotheses and indicate that less parental educational attainment, parental smoking, perceived discrimination, peer smoking, and youth maladaptive characteristics are linked to light smoking in late adolescence, which in turn is related to light smoking in young adulthood. Of note is that parental factors, discrimination, and peer smoking each impacted maladaptive characteristics in late adolescence, which also predicted light smoking in young adulthood. Findings are discussed for each of the variables in the model.

### Parental smoking

Our results extend the literature in demonstrating an association between parental smoking and offspring light smoking, which was mediated by both peer smoking and the adolescent's maladjustment. Consistent with our findings, Engels, Vitaro, Blokland, de Kemp, and Scholte (2004) showed that children of parents who smoke are more likely to select friends who smoke. In addition, according to FIT (Brook et al., 1990), as well as other research (e.g., van de Venne, Bradford, Martin, Cox, & Omar, 2006), parents who smoke may have increased rates of emotional and behavioral problems, as well as poorer coping skills. It is possible, therefore, that greater comorbid smoking and psychopathology among the parents in our cohort affected the psychological adjustment in the adolescent child and, ultimately, their light smoking. Furthermore, parental smoking had a direct effect on late adolescent light smoking, which may suggest the role of the adolescent's modeling of parental smoking behavior.

### Parental educational attainment

Our model also showed an association between less parental education and both a history of parental smoking and smoking among the youth's peers. These findings are in accordance with the literature on educational attainment and smoking in adults (Watson et al., 2003; Webb & Carey, 2008). We also extend the research on parental education and peer smoking (e.g., Fergusson et al., 2007; Waldron & Lye, 1990) to minority racial/ethnic groups.

### Youth perceived discrimination

This is the first study to demonstrate that perceived discrimination is specifically related to light smoking. Consistent with research on heavier smoking, our results suggest that youth who experienced stressful events are more likely to develop emotional and behavioral difficulties, such as depression, rebelliousness, and greater deviance (Combs et al., 2006; Szalacha et al., 2003; Williams & Williams-Morris, 2000). Gibbons, Gerrard, Cleveland, Wills, and Brody (2004), for example, showed that discrimination was longitudinally linked with distress in adolescents, which in turn predicted their substance use, including smoking. It is also plausible that peers who have been exposed to similar stressors as the youth, such as discrimination, would be more likely to smoke (Lambert, Brown, Phillips, & Jalongo, 2004).

### Peer smoking

Our model suggested that social influences linked peer smoking with both maladaptive characteristics and light smoking in late adolescence. Previous investigations have found higher levels of deviance, rebelliousness, and depression among adolescents who smoke (Repetto, Caldwell, & Zimmerman, 2005; Scal, Ireland, & Borowsky, 2003). Therefore, peers who smoke may have greater emotional and behavioral difficulties (and fewer prosocial behaviors), which they model and reinforce in the adolescent (Clark, Dogan, & Akbar, 2003). This study confirms that peer smoking does influence light smoking among African Americans and Puerto Ricans, and additional studies are needed to examine how light smoking among peers influences light smoking among their friends.

### Youth maladaptive personality and behavior

Our findings with respect to the youth's maladaptive characteristics support our conceptual model, derived from FIT, which posits that stressful life conditions, such as perceived discrimination, are predictive of adolescent internalizing and externalizing behaviors. Furthermore, and consistent with both FIT and studies of (heavier) smoking, youth with greater emotional dysregulation (e.g., depression; Repetto et al., 2005), as well as more unconventional behaviors (e.g., rebelliousness, deviance, and academic failure; Brook et al., 1990; Livaudais, Napoles-Springer, Stewart, & Kaplan, 2007), were at increased risk for light smoking. This is the first longitudinal study to demonstrate that problem behaviors in adolescence are associated with light smoking in African Americans and Puerto Ricans in both late adolescence and young adulthood.

### Racial/ethnic and gender differences

Our findings showed that the pathways to T3 light smoking were similar in male and female African American and Puerto

Rican young adults. The absence of significant racial/ethnic or gender differences in these pathways suggests a degree of independence of the demographic factors presented in our model. Future research might explore whether these results would generalize to other populations, such as White young adults, American Indians, Alaskan Natives, other Latino ethnic groups (e.g., Mexican Americans), and among some Asian Pacific Islander groups, in whom light smoking has been documented (Haiman et al., 2006; Wallace et al., 2002).

## Limitations

There are limitations to the interpretation of our findings. First, we did not assess some family measures (e.g., parental psychopathology) nor tobacco-related variables (e.g., age at smoking initiation), which might provide a more complete understanding of the pathways to light smoking in young adulthood. Second, we focused on the difference between young adult light smokers and nonsmokers because we were specifically interested in these pathways. This is of particular importance since data from the Youth Risk Behavioral Study indicate that only 2.6% of African American and 11.5% of Puerto Rican youth reported smoking more than a half pack of cigarettes per day. Future research, however, might explore the pathways that distinguish light from heavy smokers among other groups in which there are higher prevalence rates of heavier smoking during adolescence. Third, several variables were assessed simultaneously. Although based on theory and empirical research, it is possible that a reciprocal relationship exists among these variables. Despite these issues, which remain to be addressed, the results of the present study provide a cogent explanatory model of some of the pathways to light smoking among African American and Puerto Rican young adults.

In conclusion, light smoking in young adults in the United States appears to be on the rise (Lantz, 2003), especially among African Americans and Latinos (Ahluwalia et al., 2006), and there is a need to better understand factors that influence light smoking among minority racial/ethnic groups. Examination of these factors is particularly important due to the poorly understood disparities in tobacco-related outcomes between African Americans and Latinos, who have similar smoking patterns. It is possible that higher levels of discrimination, which impact stress and behavior, may differentially impact disease outcomes. As noted in Figure 1, our results suggest that both social (parental and peer smoking) and contextual (perceived discrimination) influences impinge on the youth's maladaptive personality and behavior in late adolescence (e.g., depressive symptoms and antisocial behavior). Our findings also showed that the adolescent's maladaptive characteristics (including both internalizing and externalizing symptoms) serve as precursors to light smoking in late adolescence and in young adulthood. Additional longitudinal studies are needed to further examine smoking trajectories among African Americans and Latinos, as well as how immigration, nativity, and neighborhood factors for both groups impact their respective light smoking behavior and its intergenerational nature. Furthermore, future research is needed to better understand how to incorporate these factors into individual and community-level intervention programs that target African American and Latino light smokers.

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## Declaration of Interests

None declared.

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