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Does allowing adolescents to smoke at home affect their consumption and dependence?

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Abstract

Negative parental attitudes towards smoking decrease adolescent smoking initiation but limited research explores the relationship between parental attitudes and degree of adolescent smoking among established smokers. The aim of this study was to examine the relationship between parental allowance of smoking in the home and adolescent smoking behavior and level of dependence. Interviews from 408 youths seeking assistance to quit smoking showed that adolescents who were allowed to smoke at home smoked more cigarettes per day and had higher scores on the Fagerström Test of Nicotine Dependence than those not allowed to smoke at home. Studies that additionally evaluate parental smoking status and the temporal relationship of parental allowance of smoking with changes in adolescent smoking behavior are warranted to clarify public health implications of parental smoking interdictions.

Keywords

Adolescents; Smoking; Parental Allowance; Tobacco

1. Introduction

Several studies show that adolescent smoking initiation is linked to both parental modeling and parental attitudes towards smoking initiation (Thomson et. al, 2005, Harakeh et. al, 2005, Huver et. al, 2006, Simmons-Morton, 2004, and Szabo et. al, 2006). What has not been thoroughly explored is the relationship between parental attitudes, as reflected by household smoking interdictions, and the smoking behavior of adolescents who are already smoking. Young adolescent smoking initiation is lower when youths perceive that parents expect them not to smoke, even despite favorable attitudes towards smoking and an increasing number of friends who smoke (Simmons-Morton, 2004). Thomson and colleagues (2005) also found that teens who have a household smoking ban are less likely to ever try smoking (60%) than those who do not (76%). Similarly, house rules interdicting smoking in the living room or outside the home, and communication about health risks of smoking/breathing smoke and addictive qualities of smoking reduced initiation rates (Huver et. al, 2006).

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Anti-smoking messages have been shown to be effective in preventing adolescent initiation, even coming from parents who smoke (Harakeh et. al, 2005). Indeed teenagers whose parents quit smoking are a third less likely to ever start, as compared to youths with currently smoking parents (Farkas et. al, 1999). Once smoking has started, teens with smoking parents are twice as likely to quit if their parents quit (Farkas et. al, 1999). Adolescents are also more likely to report a recent quit attempt or intention to quit if their parents prefer that they not smoke (Gilpin et. al, 1999).

Despite ample evidence linking in-home smoking policies to adolescent initiation, more information is needed on how such policies might influence degree of dependence and consumption among established smokers, which have implications for level of health risk. We hypothesized that adolescents whose parents do not allow them to smoke in the home smoke fewer cigarettes per day (CPD) and are less tobacco dependent than those who are allowed to smoke at home.

2. Methods

This report was based on data obtained from telephone interviews that screened participants for eligibility in an ongoing cessation trial looking at the safety and efficacy of buproprion for adolescent smokers who were motivated to quit. The screening protocol was approved by the National Institute on Drug Abuse (NIDA) Institutional Review Board (IRB) with a waiver of informed consent.

2.1 Recruitment and Participants

Adolescents learned of the smoking cessation treatment trial through radio, television, word-of-mouth, and print advertisements broadly targeted to youth in Baltimore, MD. Volunteers seeking enrollment underwent a twenty-minute telephone screening interview conducted by trained research staff. Callers were asked for permission to record their answers and save them anonymously for research purposes. In addition to determining eligibility for participation in the cessation trial, the interview also explored smoking history, demographic characteristics, and general health status (physical and psychological).

2.2 Measures

In order to assess whether adolescents were allowed to smoke in the home, telephone screen participants were simply asked, “Do your parents allow you to smoke at home?” Cigarette consumption was expressed as cigarettes per day (CPD) and level of dependence was assessed by the Fagerström Test for Nicotine Dependence (FTND), a 6-item questionnaire often used in clinical trials (Heatherton et. al, 1991). The Fagerström Test for Nicotine Dependence has shown reliable psychometric properties and has been used in numerous pharmacotherapy studies with adolescent smokers (Colby et al., 2000; Moolchan et al., 2005; Hanson et al., 2003; Hurt et al., 2000; Smith et al., 1996).

2.3 Data Analysis

Hierarchical linear regression analyses were used to determine differences in CPD and FTND scores among teens allowed and not allowed to smoke at home, and to conduct item-by-item differences between the two groups. The control variables ethnicity and gender were entered in the first block. The variable “Allowed to Smoke at Home” was entered in the second block of the analysis. Separate hierarchical regressions were performed for each of the outcome variables, CPD and FTND. Significance for all analyses was set at $p < 0.05$, and conducted using SPSS version 15.0.0 (SPSS, Chicago, IL). However, the sample size was formally established for the treatment trial and no separate power analysis was calculated for the current analysis which included all eligible callers.

3. Results

The sample (N=408) was composed of 52.7% African American, 40.2% European American, 4.3% mixed ethnicity, 1.4% American Indian, 1.1% Hispanic or Latino, and 0.4% Asian or Pacific Islander. Additional demographic characteristics are provided in Table 1. Forty-seven percent of participants stated that they were allowed to smoke at home.

Results of the hierarchical regression revealed that the regression equation which included control variables ethnicity and gender, and predictor variable, "Allowed to Smoke at Home" were significant for both dependent measures, CPD and FTND (R^2 = .05, F (3, 403) = 7.68, p < .001 and R^2 = .14, $F(3, 403) = 21.33$, p < .001 respectively). The predictor variable "Allowed to Smoke at Home" was responsible for an additional 3.8% of the variance in CPD and 8.1% of the variance in FTND. All variables in the model were significant predictors of FTND, ethnicity (t = 3.45, p < .002), gender (t = − 2.40, p < .02) and "Allowed to Smoke at Home" (t = 6.14, p < .001). Only ethnicity and "Allowed to Smoke at Home" were significant predictors of CPD (t = 2.10, p < .05 and t = 4.01, p < .001). Table 2 displays the unstandarized regression coefficient (B), standard error, and standardized regression coefficients (β) of all predictor variables for both models.

These results support our hypothesis that adolescents allowed to smoke at home smoked significantly more cigarettes per day and had significantly higher FTND scores than those not allowed to smoke at home (controlling for age and gender) (Table 3). Participants allowed to smoke at home had higher scores for each item on the FTND except, "Do you find it difficult to refrain from smoking in places where it is forbidden?"

4. Discussion

The current analysis showed that parental allowance of adolescent in-home smoking is positively associated with adolescent tobacco consumption and dependence levels. About half our sample was allowed to smoke at home; independent of ethnicity or gender, these youths had higher CPD and FTND scores. For all but one question on the FTND, teens allowed to smoke at home endorsed higher dependence. The answer to the question "Do you find it difficult to refrain from smoking in places where it is forbidden?" was not found to differ significantly among the groups. One possible explanation is that most of the sample attended school and was therefore practiced at restraining from smoking during those hours.

One limitation of the study is that we did not examine precise temporal relationships between in-home policy and smoking behavior. For example, teens may have always been disallowed to smoke at home, or just at a later point in their smoking trajectory. This precludes inferences of causation between parental allowance of smoking and trajectory. Also, the extent of the smoking area in the home was not analyzed, with restrictions possibly applying to certain rooms or areas. The use of a single-item measure did not probe the extent of the smoking restrictions, or whether the adolescents wanted to smoke at home. Because the phone interview was brief, parental smoking status was not recorded. Although this information might help both smoking and non-smoking parents to better understand how their advisement might impact their child's smoking, it is interesting that a positive association with parental restrictions remained in this sample that included both smoking and non-smoking parents. Other factors, including concomitant psychopathology and substance use, might also play a role in this relationship. Future studies should explore this possibility.

Nonetheless, our results indicate a clear relationship between in-home smoking policy and degree of adolescent tobacco dependence and smoking, which is broadly linked to health outcomes. As such, prospective studies that examine the effect of parental smoking restrictions and parental smoking on adolescent cigarette consumption and trajectory to dependence among

a broader range of adolescents are warranted. This research was supported by the Intramural Research Program of the National Institutes of Health, National Institute on Drug Abuse

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Table 1

Demographic Characteristics

	African American	European American
Participants (%)	52.7	40.2
Female (%)	64.6	62.8
Allowed to smoke at home(%)	48.8	54.3
FTND score ± S.D	4.9 ± 2.4	5.9 ± 2.0
CPD ± S.D	13.3 ± 13.9	16.2 ± 7.5

Table 2

Results of the hierarchical linear regression for CPD and FTND with control variables, ethnicity and gender, and predictor variable "Allowed to Smoke at Home".

CPD			
Variable	**B**	**SE B**	**β**
ethnicity	1.27	0.6	0.10**
gender	0.77	1.17	0.03
Allowed to Smoke	4.49	1.12	0.20*
FTND			
Variable	**B**	**SE B**	**β**
ethnicity	0.40	0.12	0.16**
gender	−0.53	0.22	0.11**
Allowed to Smoke	1.31	0.21	.29*

R^2 = .05, $R^2\Delta$ = .038

* $p < .001$

** $p < .05$

R^2 = .14, $R^2\Delta$ = .081

* $p < .001$

** $p < .02$

Table 3

Demographic, consumption, and dependence measures by predictor variable Allowed to Smoke at Home

	Allowed to Smoke at Home (n=193)	Not Allowed to Smoke at Home (n=215)
CPD ± S.D.	16.0 ±11.0	13.0 ± 8.9
FTND score ± S.D.	6.0 ± 2.0	5.0 ± 2.2
Age (years)	16.1 ±1.1	15.7 ± 1.1
Gender (% female)	70	59
Ethnicity (% Afr. American)	46	51