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Impact of parental home smoking policies on policy choices of independently living young adults

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Abstract

Objective—To determine whether adolescents living in parental homes where smoking is banned are more likely to move into smoke-free living quarters when they leave home.

Methods—We analyzed data on 693 youths from a four-year, three-wave prospective study of a representative sample of Massachusetts adolescents (aged 12–17). All youths resided in independent living quarters at follow-up. The primary outcome was presence of a smoking ban in the living quarters at follow-up. The primary predictor was presence of a household smoking ban in the parental home, assessed two years prior to the outcome. Generalized linear mixed effects models examined the effect of a parental household smoking ban on the odds of moving into smoke-free living quarters at follow-up overall and stratified by smoking status at follow-up.

Results—Youths leaving home had much higher odds of moving to smoke-free living quarters if their parental household had had a smoking ban (odds ratio [OR] = 12.70, 95% CI, 6.19–26.04). Other independent predictors included moving into a school or college residence (odds ratio [OR] = 3.88, 95% CI 1.87–8.05), and not living with smokers at follow-up (odds ratio [OR] = 3.91, 95% CI 1.93–7.92).

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What this paper adds Very little is known about the potential long-term effect on adolescents and young adults of having lived in a parental household where smoking was banned. This study provides evidence that a parental household smoking ban is transported to the living quarters once youth move out of the home.

Competing interests: None of the authors declares any competing interests with regard to this research.

Human Participant Protection This study was approved by the institutional review boards of the University of Massachusetts at Boston (survey administration and data collection site) and the Boston University Medical Center (data analysis site for the study described in this brief).

Conclusions—A household smoking ban in the parental home appears to lead youth to prefer smoke-free living quarters once youths leave home.

Keywords

adolescent health; health policy; smoking; tobacco smoke pollution

Household smoking bans are advocated to protect nonsmokers, especially children, from the health risks of secondhand smoke exposure.¹ The prevalence of voluntary household smoking restrictions including complete home smoking bans is increasing.^{2,3} A growing body of evidence has examined the potential impact of household smoking bans on youth attitudes and behaviors. A recent longitudinal study reported that living in a household with a smoking ban significantly increased the likelihood that youths had anti-smoking attitudes and norms at follow-up.⁴ A household smoking ban reduced the progression to smoking experimentation among youths who lived with nonsmoking parents, although it did not have the same effect on youths whose parents smoked.^{5–8}

In addition to reducing or eliminating secondhand smoke exposure among family members, household smoking bans may have the additional benefit of increasing the transmission of smoke-free living quarters as a norm across generations. Youths who grow up in smoke-free homes may be more likely than youths from homes where smoking is permitted to select smoke-free living quarters when they leave the parental home. This is important because youths remain vulnerable to initiating smoking or progressing from intermittent to daily smoking during the late adolescent and young adult years.^{9–12} During these years, many youths move from the parental home into college. One cross-sectional study found that college students living in smoke-free housing had a lower prevalence of smoking than residents of unrestricted housing.¹³ Thus, it appears that moving to a smoke-free residence may protect students who were not smokers in high school from initiating smoking in college.

In this study, we examine whether living in a parental home with a smoking ban increases the odds that youth will live in a smoke-free environment once they leave the parental household.

METHODS

We conducted a four-year, three-wave cohort study of a representative sample of 3,834 Massachusetts youths aged 12–17 at baseline in 2001–2002, of whom 2,791 (72.8%) were re-interviewed after two years (in 2003–2004) and 2,217 (57.8%) were re-interviewed after four years (in 2005–2006). The current analyses focused on 693 youths who moved out of their parental household at wave 1 and who were living independently at wave 2, or who moved out of the parental home at wave 2 and were living independently at wave 3. In our analyses, we refer to Time 1 as having moved out at either wave 1 or wave 2, and Time 2 as the subsequent follow-up interview at either wave 2 or wave 3.

Measures

The main predictor variable was the presence of a complete household smoking ban at Time 1. At each wave, all youths were asked: “Some households have rules about when and where people may smoke. When you have visitors who smoke, are they allowed to smoke inside your home?” Youths who lived in a home where at least one adult smoked were asked, “Do smokers in your household smoke inside your home?” Youth were categorized as having a complete household smoking ban if they reported at Time 1 that visitors were not allowed to smoke inside the home and, for those who lived in a home where at least one adult smoked, if there was a ban on smoking inside the home. At waves 2 and 3 the wording was slightly different for all youths who were not living with their parents. They were asked: “When you have visitors

who smoke, are they allowed to smoke inside your *living quarters*?” and “Do smokers in your household smoke inside your *living quarters*?” Youth were categorized as having a complete household smoking ban at Time 2 if they reported that visitors were not allowed to smoke inside the living quarters and, for smokers and/or those who lived with a smoker, if there was a ban on smoking inside the living quarters. The outcome was assessed two years after the main predictor.

The analysis controlled for these factors: (1) type of living quarters at Time 2 (living in a school or college dorm; living in own apartment; and all other living arrangements); (2) smoking status at Time 2 (smoked at least one cigarette including one or more within the past 30 days); (3) having lived with at least one smoker in the parental household at Time 1; (4) living with someone who smokes at Time 2; (5) gender; (6) age group (< 17 or 18 and older at Time 1); (7) race (white, non-Hispanic versus other); and (8) parental education level (college graduate or not). The variables from the follow-up period are modeled at either wave 2 or wave 3 depending upon respondent moving from the parental home at baseline or wave 2.

Data analysis was done using multilevel generalized linear mixed modeling (“GLLAMM” function in Stata 10.0). Secondary stratified analyses were conducted to assess whether effects differed based on the youths' smoking status at follow-up. For the baseline sample, survey weights were computed that adjusted for the number of telephones per household, and hence for the probability of selection. Adjustments to the baseline weights were constructed using a raking procedure to correct for biased attrition. (More details on this procedure have been published elsewhere⁴).

RESULTS

Table 1 shows characteristics of the sample according to the smoking policy of the parental home at Time 1 and the living quarters following a move from the parental household.

Among 693 youths who moved out of the parental home, 570 (82.3%) moved to smoke-free living quarters at follow-up, while 123 (17.7%) moved to living quarters where smoking was permitted. For weighted percentages, 88.7% (505/570) of youths who moved to smoke-free living quarters came from a smoke-free parental home, compared to 36.4% (48/123) of the youths who moved to living quarters that permitted smoking. The majority of those who moved to smoke-free living quarters were living in a college or school dormitory, whereas fewer than half of youths who moved to smoking-permitted quarters were in a college or school residence.

Among youths who moved to smoke-free living quarters, those who moved from smoke-free parental homes were less likely to have lived with a parent who smoked and to live with a smoker at follow-up compared to those who moved from homes permitting smoking (Table 1). Among youths who moved to smoking-permitted living quarters, those who moved from smoke-free parental homes were more likely to be smokers at follow-up but less likely to have lived with a parent who smoked.

Table 2 presents adjusted analyses of the association between household smoking policy of the parental home and the odds of a youth moving to smoke-free living quarters at follow-up.

Coming from a parental household with a smoking ban increased the odds that youth moved into smoke-free living quarters at follow-up (odds ratio [OR] = 12.70, 95% CI, 6.19–26.04), even after controlling for the youth's smoking status, the presence of another smoker in the household, and a host of potential individual-level confounders. Other independent predictors of moving to living quarters with a smoke-free policy were moving into a school or college dorm, not smoking at follow-up and not living with a smoker. Stratified analyses suggest that the effect of a household smoking ban in the parental home was stronger among youths who

were not smokers at follow-up (OR = 21.34, 95% CI, 8.20–55.52) compared to those who were smokers at follow-up (OR = 3.35, 95% CI, 1.28–8.74), however the effect was significant for both subgroups.

DISCUSSION

To the best of our knowledge, this is the first longitudinal study to examine whether a smoking ban in a parental home influences the subsequent household smoking policy adopted by a youth in independent living quarters. Using a multilevel generalized linear mixed model, we found that a parental home with a household smoking ban significantly increased the odds that adolescents moved into living quarters where smoking was banned, even if they were smokers at follow-up.

Moving to a school or college residence rather than to an apartment or other facility was also strongly associated with the smoking policy of a youth's living quarters after leaving home. It is possible that this factor, rather than the youth's own preferences, affected the smoking policy of a youth's residence at follow-up. However, the vast majority resided in Massachusetts at Time 2, and as of October 2, 2008, only 11 Massachusetts colleges or universities had 100% smoke-free residential housing policies¹⁴ out of 252 colleges and universities in Massachusetts.¹⁵ This suggests that the majority of college students had a choice about what type of housing smoking policy their college residence would have upon arrival. Furthermore, the smoking policy of the parental home retained a strong independent effect on the outcome even when this confounding factor (college residence) was accounted for in the multivariate models. Not surprisingly, youths who were themselves smokers or who lived with smokers were less likely to move to living quarters where smoking was not permitted.

This study found that a parental household smoking ban increases the odds of moving into smoke-free living quarters once youth leave the parental home above and beyond living situations and a host of individual-level predictors. This finding was present even among those who were smokers at follow-up. This suggests that promoting the adoption of household smoking bans in homes with youths may have an additional benefit beyond reducing secondhand smoke exposure and promoting nonsmoking attitudes. It may be an effective way to transmit a nonsmoking norm throughout a child's life and even across generations.

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Sample characteristics by the smoking policy of living quarters after moving out of parental household at transition baseline (Time 1)^a

Table 1

	TOTAL N=693	Living quarters smoke-free at follow-up n=570		Living quarters not smoke-free at follow-up n=123	
		Parental home smoke-free N=505	Parental home not smoke-free N=65	Parental home smoke-free N=48	Parental home not smoke-free N=75
Total (%)	(100.0)	(88.7)	(11.3)	(36.4)	(63.6)
Follow-up living situation					
School or college dormitory	438 (64.1)	355 (72.1)	42 (66.4)	6 (12.7)	35 (46.6) ^c
Fraternity/sorority	27 (3.8)	17 (3.7)	2 (2.6)	6 (9.8)	2 (3.1)
Military base	2 (0.3)	2 (0.5)	0 (0.0)	0 (0.0)	0 (0.0)
In a house or apartment	107 (14.9)	73 (12.2)	7 (9.9)	16 (34.6)	11 (15.5) ^c
Other	107 (15.2)	48 (9.9)	14 (21.1) ^b	19 (40.7)	26 (34.1)
Missing [#]	12 (1.7)	10 (1.8)	0 (0.0)	1 (2.9)	1 (1.5)
Smoker at follow-up					
No	515 (75.0)	399 (79.3)	46 (70.3)	18 (38.2)	52 (71.1)
Yes	178 (25.0)	106 (20.7)	19 (29.7)	30 (61.8)	23 (28.9) ^c
Lived with a parent who smoked at transition baseline (Time 1)					
No	504 (72.5)	424 (83.6)	31 (47.7)	32 (67.2)	17 (21.0)
Yes	189 (27.5)	81 (16.4)	34 (52.3) ^b	16 (32.8)	58 (79.0) ^c
Lives with someone who smokes at follow-up					
No	513 (74.4)	426 (84.4)	44 (65.0)	14 (29.5)	29 (38.8)
Yes	179 (25.6)	79 (15.6)	21 (35.0) ^b	33 (70.5)	46 (61.2)
Gender					
Male	308 (44.9)	229 (44.9)	28 (44.9)	18 (39.8)	33 (47.4)
Female	385 (55.1)	276 (55.1)	37 (55.1)	30 (60.2)	42 (52.6)
Race/ethnicity					
Non-Hispanic White	594 (85.6)	436 (86.3)	56 (85.7)	39 (79.2)	63 (84.8)
Other	94 (14.4)	66 (13.7)	9 (14.3)	9 (20.8)	10 (15.2)
Age at Time 1					
17 and under	50 (7.6)	26 (5.4)	5 (7.9)	5 (12.5)	14 (20.0)
18 and older	643 (92.4)	479 (94.6)	60 (92.1)	43 (87.5)	61 (80.0)

	TOTAL N=693	Living quarters smoke-free at follow-up n=570		Living quarters not smoke-free at follow-up n=123	
		Parental home smoke-free N=505	Parental home not smoke-free N=65	Parental home smoke-free N=48	Parental home not smoke-free N=75
Parental education^a					
Not college graduate	291 (44.4)	194 (40.2)	32 (52.3)	22 (50.6)	43 (63.7)
College graduate	390 (55.6)	306 (59.8)	30 (47.7)	25 (49.4)	29 (36.3)

⁺Table entries are weighted percentages.

[#]Information on the living situation was not provided.

^aParental education is defined as the education of the adult informant of the household.

^bStatistical difference among the follow-up living quarters smoke-free group by parental home ($P < .05$ for overall χ^2 test)

^cStatistical difference among the follow-up living quarters not smoke-free group by parental home ($P < .05$ for overall χ^2 test)

Table 2

Association between presence of a parental household smoking ban and living in smoke-free quarters at follow-up, overall and stratified by non-current and current smokers.

	Adjusted OR (95% CI) [#] Outcome: Living quarters smoke-free at follow-up		
Main predictor variable	TOTAL SAMPLE (n=663)	Not a current smoker at follow-up (n=494)	Current smoker at follow-up (n=169)
Presence of a complete smoking ban in parental household			
No	1.00	1.00	1.00
Yes	12.70 *** (6.19–26.04)	21.34 *** (8.20–55.52)	3.35 ** (1.28–8.74)
Individual-level covariates			
Follow-up living situation ^a			
All other	1.00	1.00	1.00
School or college dorm	3.88 *** (1.87–8.05)	3.17 ** (1.19–8.44)	5.37 ** (1.96–14.71)
In a house or apartment	0.97 (0.40–2.26)	0.85 (0.24–3.02)	1.03 (0.34–3.15)
Smoker at follow-up			
No	1.00	----	----
Yes	0.48 * (0.25–0.93)	----	----
Lived with a parent who smoked at transition baseline (Time 1)			
No	1.00	1.00	1.00
Yes	0.66 (0.32–1.33)	0.61 (0.24–1.56)	0.59 (0.23–1.48)
Lives with someone who smokes at follow-up			
No	1.00	1.00	1.00
Yes	0.26 *** (0.13–0.52)	0.23 ** (0.09–0.59)	0.35 * (0.14–0.89)
Gender			
Male	1.00	1.00	1.00
Female	0.91 (0.49–1.68)	1.35 (0.60–3.02)	0.48 (0.20–1.20)
Race/ethnicity			
Non-Hispanic White	1.00	1.00	1.00
Other	0.75 (0.36–1.56)	0.81 (0.33–1.98)	0.50 (0.14–1.74)
Age at transition baseline (Time 1)			
17 and under	1.00	1.00	1.00
18 and older	1.11 (0.27–4.51)	1.22 (0.20–7.46)	0.98 (0.14–6.85)
Parental education ^b			
Not college graduate	1.00	1.00	1.00
College graduate	0.94 (0.48–1.85)	0.81 (0.38–1.71)	1.03 (0.38–2.77)

Note. OR=Odds Ratio; CI = confidence interval.

* p<.05,

** p<.01,

*** p<.001

[#] Including all control variables, regardless of significance of contribution to the model.

^aCategories condensed due to small sample sizes of other living situations. "All other" includes fraternity/sorority; military base and other.

^bParental education is defined as the education of the adult informant of the household.