



# The dynamic role of parental influences in preventing adolescent smoking initiation



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## HIGHLIGHTS

- Longitudinal data from 8 nationally representative age cohorts of nonsmokers used.
- Examined the timing of parental and peer influences on youth smoking initiation.
- Analysis was a cohort-sequential design, using lagged logistic regression models.
- Association with peers who smoke remains a strong risk factor of smoking initiation.
- Connectedness, monitoring, and punishment remain important in reducing smoking risk.

## ARTICLE INFO

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## ABSTRACT

**Background:** As adolescents grow, protective parental influences become less important and peer influences take precedence in adolescent's initiation of smoking. It is unknown how and when this occurs. We sought to: prospectively estimate incidence rates of smoking initiation from late childhood through mid-adolescence, identify important risk and protective parental influences on smoking initiation, and examine their dynamic nature in order to identify key ages.

**Methods:** Longitudinal data from the National Survey of Parents and Youth of 8 nationally representative age cohorts (9–16 years) of never smokers in the U.S. were used (N = 5705 dyads at baseline). Analysis involved a series of lagged logistic regression models using a cohort-sequential design.

**Results:** The mean sample cumulative incidence rates of tobacco use increased from 1.8% to 22.5% between the 9 and 16 years old age cohorts. Among risk factors, peer smoking was the most important across all ages; 11–15 year-olds who spent time with peers who smoked had 2 to 6.5 times higher odds of initiating smoking. Parent–youth connectedness significantly decreased the odds of smoking initiation by 14–37% in 11–14 year-olds; parental monitoring and punishment for smoking decreased the odds of smoking initiation risk by 36–59% in 10–15 year-olds, and by 15–28% in 12–14 year-olds, respectively.

**Conclusions:** Parental influences are important in protecting against smoking initiation across adolescence. At the same time, association with peers who smoke is a very strong risk factor. Our findings provide empirical evidence to suggest that in order to prevent youth from initiating smoking, parents should be actively involved in their adolescents' lives and guard them against association with peers who smoke.

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## 1. Introduction

Tobacco use is considered to be a pediatric disease because most adult tobacco dependence starts before the age of 18 years (American

*Abbreviations:* NSPY, National Survey of Parents and Youth; RUF, Restricted Use Files; T1, round 1; T2, round 2; T3, round 3; T4, round 4; Y, responses as reported by all youth in the sample who were 9–18 years of age; T, responses as reported by all youth in the sample who were 14–18 years of age; OR, odds ratio; CI, confidence interval.

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Academy of Pediatrics, 2009; Prokhorov et al., 2006). Although there has recently been a decline in teen smoking (Johnston, O'Malley, Bachman, & Schulenberg, 2011) we have not met the Healthy People 2020 objectives of reducing teen smoking initiation to 4.2% (U.S. Department of Health and Human Services, 2012). This is troubling since early smoking initiation increases the likelihood of development of future tobacco related morbidity (U.S. Department of Health and Human Services, 2010; United States Public Health Service Office of the Surgeon General, 2006). Thus, it is crucial to develop effective directed teen tobacco prevention interventions in order to avoid smoking initiation.

A large body of research indicates that both peers and parents play a crucial role in adolescent smoking initiation (Bricker, Peterson,

Andersen et al., 2007; Bricker, Peterson, Sarason, Andersen, & Rajan, 2007; Bricker et al., 2009; Otten, Engels, van de Ven, & Bricker, 2007). Adolescence is characterized as a period of development when youth seek increased emotional security and social connectedness from their peers and hope to gain autonomy from their parents (Bauman, Carver, & Gleiter, 2001). Theory suggests that this need for adolescents to feel connected to their friends may explain why peer smoking is a strong risk factor for smoking initiation as youth may want to model their friend's smoking behavior (Bernat, Erickson, Widome, Perry, & Forster, 2008; Hoffman, Monge, Chou, & Valente, 2007; Kim, Fleming, & Catalano, 2009; Simons-Morton, Chen, Abrams, & Haynie, 2004; Simons-Morton & Farhat, 2010). Theorists posit that adolescents with strong bonds to their parents are more likely to respect and follow parental rules and are less likely to initiate smoking (Krohn, Massey, Skinner, & Lauer, 1983; Matsueda & Heimer, 1987). These theories are supported by recent research which demonstrates the risk posed by peer smoking and the protective effect that high levels of parental influences such as monitoring and anti-tobacco rules have on preventing adolescent smoking initiation (Harakeh, Scholte, de Vries, & Engels, 2005; Simons-Morton, 2004; Simons-Morton & Farhat, 2010; Stanton et al., 2004).

Despite advances in our understanding of peer and parent influences on smoking initiation, there are many important gaps in the literature. While it is known that smoking initiation increases with age (Johnston et al., 2011; Kim et al., 2009; Substance Abuse and Mental Health Services Administration, 2011), it is unclear at what age peer smoking influences gain importance as a risk factor for smoking initiation and parent influences lose or retain their importance in protecting against initiation. Furthermore, it is unclear what other risk factors such as parental smoking and socioeconomic factors remain important in predicting smoking initiation. Without such knowledge, tobacco prevention researchers cannot determine age-appropriate interventions and parents may not know the best strategies for preventing tobacco use among their adolescents.

We sought to decrease these gaps by conducting a longitudinal examination of the National Survey of Parents and Youth (NSPY) to determine which parental influences remain important as youth grow during adolescence. The aim of this study was threefold: (1) to prospectively estimate incidence rates of smoking initiation from late childhood through mid-adolescence, (2) to identify important risk and protective parental influences for smoking initiation and the concomitant effect of peer influence, and (3) to examine the dynamic nature of the relationship between smoking initiation and risk and protective influences. Two developmental hypotheses were tested in this study: Hypothesis 1: Youth with consistently strong parental influences during adolescence will have lower rates of smoking initiation, and Hypothesis 2: Peer influence on smoking initiation increases during adolescence as parental influences decrease.

## 2. Materials and method

### 2.1. Sample and measures

#### 2.1.1. Sample

Data are from the Restricted Use Files (RUF) of the NSPY, a longitudinal, nationally representative household-based survey of adolescent and parent dyads conducted in 90 locations across the US. A multi-stage sampling design was used to provide a representative cross-section of America's 9–18 year-old youth. One parent was chosen from each eligible household. Detailed information about the sampling and methodology of the NSPY can be found elsewhere (Westat, 2003, 2006, Chaps. 1–7). Dyads were recruited for the study and interviewed during T1 and subsequently tracked and re-contacted for interview in yearly follow-up rounds. We analyzed data from rounds 1 (T1), 2 (T2), 3 (T3), and 4 (T4), collected from November 1999 to June 2004 in order to evaluate smoking initiation patterns in youth as they progressed from late childhood to mid-adolescence.

**Table 1**

Sample descriptive statistics for the main variables at baseline (T1).

Measures	N	Weighted percent / weighted mean	Weighted std error	Min	Max	Missing (%)
<i>Sociodemographics</i>						
Youth age at baseline	5705	12.03	0.03	9	16	0
Gender	5705					
Male	2969	51%				0
Race/ethnicity	5705					
White (Non-Hispanic)	3737	63%				0
Black or African American	896	17%				0
Hispanic	857	16%				0
Other	215	4%				0
Parental education	5661					
College or higher	2607	46%				0.77
Family structure	5705					
Two parents	4114	72%				0
<i>Tobacco variables</i>						
Parental smoking status	5694					
Ever	3901	68%				0.2
Peer smoking influence: Time spent with friends who smoked	5672					
Ever	648	13%				0.58
<i>Parental influences</i>						
Parent-adolescent connectedness (Y)	5561	1.24	0.03	0	3	2.52
Parental monitoring (Y)	5599	1.47	0.03	0	3	1.85
Perceived parental punishment (T)	2971	4.6	0.02	1	5	0.74

T1 = round 1 of the NSPY survey.

Y = as reported by all youth in the sample who were 9–18 years of age.

T = as reported by all youth in the sample who were 14–18 years of age.

Although the overall survey consisted of 9–18 year old youth, in order to have three rounds of follow-up, the sample for this analysis consisted of the 9–16 year-old youth who reported that they had “Never smoked” and had a parent/guardian who also answered the T1 survey at baseline ( $n = 5705$  dyads). Thus, our cohort was 9–16 years of age at baseline and 10–17 years of age at the first year of follow-up for incidence of smoking initiation. Total sample size for dyads at T2, T3, and T4 was: 4875, 4372, and 3829, respectively. Table 1 provides the detailed information for the sample. Data analysis activities were approved by our institutional review board.

#### 2.1.2. Assessment

The NSPY questions were chosen to resemble questions from the Monitoring the Future, National Household Education Survey, and the National Survey on Drug Use and Health (Thomas & Perera, 2006). Parental consent and youth assent to conduct the interviews were obtained.

#### 2.1.3. Measures

**2.1.3.1. Outcome variable.** The outcome variable of interest was smoking status after T1. Responses to the questions regarding smoking behavior within each round T2 to T4 were combined to create a tobacco use index broadly based on the categories used by Bernat et al. (2008) and Leatherdale (2008). The categories were then re-defined as: (1) Never Smoker: someone who has never smoked or (2) Smoking Initiators: included both Ever Smokers (defined as someone who smoked some or regularly but not in the last 30 days) and Current Smokers (defined as someone who reported any smoking in the last 30 days). In order to estimate cumulative rates, the first “yes” answer during any of the follow-up interviews marked the smoking initiation for never smokers and was used for the estimation of incidence rates.

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