



Short communication

Assessing teen smoking patterns: The weekend phenomenon

Steffani R. Bailey^{a,*}, Christina J. Jeffery^a, Sarah A. Hammer^a, Susan W. Bryson^a,
Diana T. Killen^a, Seth Ammerman^b, Thomas N. Robinson^{a,c}, Joel D. Killen^a

^a Stanford University School of Medicine, Stanford Prevention Research Center, 1070 Arastradero Road, Suite 300, Palo Alto, CA 94304-1334, USA

^b Stanford University School of Medicine, Department of Pediatrics, Division of Adolescent Medicine, 1174 Castro Street, Suite 250-A, Mountain View, CA 94040, USA

^c Stanford University School of Medicine, Department of Pediatrics, Division of General Pediatrics, Stanford, CA 94305, USA

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ABSTRACT

Background: Adolescent cigarette smokers may have more daily variability in their smoking patterns than adults. A better understanding of teen smoking patterns can inform the development of more effective adolescent smoking cessation interventions.

Methods: Teen smokers seeking cessation treatment ($N = 366$) reported the number of cigarettes smoked on each day of a typical week. A paired t -test was used to examine differences between weekday (Sunday–Thursday) and weekend (Friday–Saturday) smoking. Main effects and interactions for race/ethnicity and gender were assessed using a 2-way ANOVA for the following variables: typical weekly smoking, average weekday smoking, average weekend smoking, and difference between weekday and weekend smoking. Scheffé post hoc tests were used to analyze any statistically significant differences.

Results: There was significantly more weekend smoking compared to weekday smoking, $p < 0.001$. The difference in weekday versus weekend smoking levels was larger for females than for males, $p < 0.05$. Hispanics reported less typical weekly smoking, $p < 0.001$, less weekday smoking, $p < 0.001$, and less weekend day smoking, $p < 0.01$, compared to Caucasians and multi-racial teens. There was no difference in weekend day versus weekday smoking by race/ethnic background.

Conclusions: Using a more detailed assessment of smoking quantity captures patterns of adolescent smoking that may lead to more effective smoking cessation interventions.

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1. Introduction

Adolescents' smoking patterns may be more variable than those of adults. However, most studies with adult and adolescent smokers measure only average or global levels of consumption, which fail to capture variability in daily smoking patterns. Qualitative studies reveal that teens have difficulty in answering seemingly straightforward queries about cigarette consumption because many report differences between the amounts smoked on weekdays versus weekends (Nichter et al., 2002). Such findings have important clinical and research implications, as current measures may miss the heterogeneity of teen smoking patterns.

Three studies have provided quantitative data on variability in daily smoking patterns among high school aged teens. Using time-line follow-back (TLFB), Lewis-Esquerre et al. (2005) found variability in teen smoking patterns that would not have been detected with a global measure of average cigarettes per day. Thus, although the teen participants smoked an average of 10 cigarettes per day, the average standard deviation for 30-day data was 3.7.

Further, although TLFB variables and the cigarettes per day variable were correlated, the differences in estimates of cigarettes per day obtained from the global measure versus TLFB ranged from –7.7 to 25 cigarettes. No data were provided regarding differences between weekend and weekday smoking patterns.

Grimshaw et al. (2003) found two distinct groups of smokers in a sample of 15- to 19-year-old teens who smoked at least one cigarette everyday: (1) those who smoked less during the week and smoked more than 1.5 times the weekday consumption on weekends and (2) those who smoked more or less the same number of cigarettes over a 7-day period. It should be noted that this data was collected from non-treatment seeking adolescents and the survey response rate was relatively low (30%).

Finally, as part of a study designed to examine adolescent nicotine dependence and smoking cessation outcomes among 14- to 19-year-old adolescents, Horn et al. (2003) found that the teens reported smoking about 1.5 times more cigarettes per weekend day than per week day (16.89 on weekends vs. 11.17 on weekdays). It was not reported if this difference was statistically significant.

More accurate descriptions of teen smoking patterns could lead to the development of more targeted cessation interventions. For example, if teens smoke more on weekends, knowledge of the specific triggers associated with “weekend smoking” (e.g., alcohol

* Corresponding author. Tel.: +1 408 451 7303; fax: +1 650 723 6450.

E-mail address: stbailey@stanford.edu (S.R. Bailey).

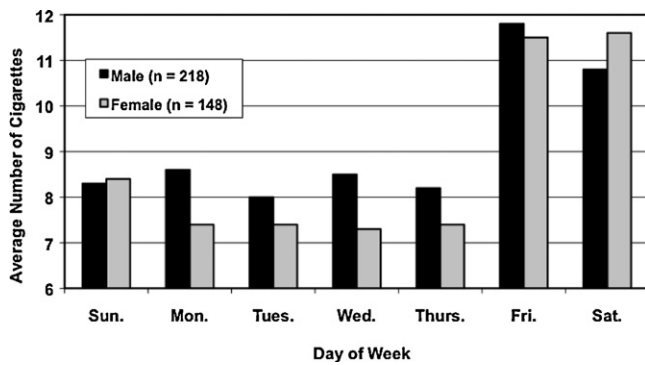


Fig. 1. Typical day of week smoking by gender.

use or boredom on the weekends) could guide treatment program development, and pharmacotherapy could be prescribed or adjusted based on daily consumption levels. Further, if demographic differences in these patterns exist, future research should examine the etiology of these differences.

In this paper, we examine both the variability in day-to-day smoking patterns reported by teen smokers seeking cessation treatment and whether consumption patterns differ by weekday versus weekend. Our diverse sample of teens also allowed the investigation of interactions of both race/ethnicity and gender on consumption patterns. To our knowledge, this is the first study to examine whether patterns differ by gender and/or race/ethnicity in treatment-seeking adolescent smokers. Although recent national data suggest that males and females are similar in overall cigarette consumption levels, it is unknown if they differ in their daily smoking patterns (Johnston et al., 2009; Substance Abuse and Mental Health Services Administration, 2010). These datasets have reported racial/ethnic differences in overall cigarette consumption, but we are not aware of studies that have assessed whether there are also racial/ethnic differences in daily smoking patterns.

2. Methods

2.1. Participants

Data were obtained from adolescent smokers who were screened for eligibility to participate in a randomized clinical trial designed to examine the efficacy of extended cognitive behavioral treatment for smoking cessation. Participants were recruited from continuation high schools and one comprehensive high school in the San Francisco/San Jose Bay Area through classroom presentations and informational tables set up during the school day. Those who were interested in quitting smoking and smoked at least one cigarette on at least one day of the past week were included in the current analyses. The study was approved by the Stanford University Administrative Panels on Human Subjects in Medical Research.

2.2. Measures

2.2.1. Demographics. Gender and race/ethnicity were reported by the participants and the following categories were used in analyses: Caucasian, Hispanic, Non-Hispanic minority, and Multi-racial. Due to low numbers of certain races, the Non-Hispanic minority category comprises the following races: American Indian/Alaska Native, Asian, Black/African American and Native Hawaiian/other Pacific Islander.

2.2.2. Typical day of week smoking. Typical day of week smoking was assessed with the query "How many cigarettes do you smoke on each day of a typical week?" Teens were asked to respond with one number for how many cigarettes they smoked on a typical Monday, a typical Tuesday, etc. If the teen provided a range of values, he or she was prompted to provide one number. Teens were asked to count any part of a cigarette smoked, even a puff, as one cigarette. The responses to this question were used to generate the following variables.

2.2.3. Typical weekly smoking. Calculated as a sum of the number of cigarettes reported for each day of a typical week.

2.2.4. Average weekday and weekend smoking. "Weekday smoking" is defined as Sunday–Thursday and "weekend smoking" refers to Friday–Saturday. We used this

Table 1
Means and standard deviations (in parentheses) for smoking patterns by gender and race/ethnicity.

	Caucasian (N = 80)		Hispanic (N = 147)		Non-Hispanic minority (N = 67)		Multi-Racial (N = 72)		
	Female (N = 32)	Male (N = 48)	Female (N = 63)	Male (N = 84)	Female (N = 23)	Male (N = 44)	Female (N = 30)	Male (N = 42)	
Typical weekly smoking (sum of Sunday–Saturday) ^a	74.4 (37.4)	71.7 (47.6)	48.6 (35.5)	56.0 (42.2)	59.0 (32.3)	61.2 (41.0)	73.8 (54.1)	75.6 (46.9)	Race/ethnicity $F(3,358) = 6.4, p < 0.001$
Average weekday smoking ^a	9.3 (5.1)	9.4 (6.6)	5.9 (4.5)	7.2 (5.8)	7.2 (4.1)	8.0 (5.7)	9.5 (7.1)	9.7 (6.2)	Gender ns Race/ethnicity $F(3,358) = 6.5, p < 0.001$ Gender × race/ethnicity ns
Average weekend smoking ^a	13.9 (7.7)	12.3 (7.8)	9.6 (7.1)	10.0 (7.6)	11.4 (7.1)	10.7 (7.1)	13.2 (9.6)	13.5 (8.8)	Gender × race/ethnicity ns Race/ethnicity $F(3,358) = 4.8, p < 0.01$ Gender ns
Difference between weekend and weekday smoking	4.6 (5.8)	2.9 (3.6)	3.7 (4.0)	2.8 (4.5)	4.2 (4.9)	2.7 (3.9)	3.8 (3.8)	3.7 (4.7)	Gender × race/ethnicity ns Race/ethnicity ns Gender $F(1,358) = 4.4, p < 0.05$ Gender × race/ethnicity ns

ns = not significant.

^a Hispanics different from Caucasians and multi-racial.

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