



Increased attention to the tobacco power wall predicts increased smoking risk among adolescents



Steven C. Martino*, Claude M. Setodji, Michael S. Dunbar, William G. Shadel

RAND Corporation, Pittsburgh, PA, United States

HIGHLIGHTS

- This study evaluated the association between attention paid by adolescents to the tobacco power wall and their susceptibility to future smoking
- Attention toward the tobacco power wall was found to be significantly associated with future smoking susceptibility
- This finding suggests that policies aimed at decreasing the prominence of power walls in retail outlets should be given careful consideration

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ABSTRACT

The purpose of this correlational study was to evaluate the association between attention paid by adolescents to the tobacco power wall and their susceptibility to future smoking. The study was conducted in the RAND Store Lab (RSL), a life-sized replica of a convenience store designed to investigate how tobacco advertising displays in retail point-of-sale environments relate to tobacco use risk and behaviors. In this study, middle and high school students ($N = 80$) shopped in the RSL while their attention to the tobacco power wall was measured covertly. Before and after shopping in the RSL, participants completed a measure of susceptibility to smoking in the future. Controlling for baseline cigarette smoking susceptibility and other potential confounders, attention toward the tobacco power wall was found to be significantly associated with future smoking susceptibility, $p = .046$. This finding suggests that policies aimed at decreasing the prominence of power walls in retail outlets should be given careful consideration as ways to reduce the impact of point-of-sale tobacco advertising and promotion on youth smoking susceptibility.

1. Introduction

Cigarette smoking is the leading cause of preventable death in the U.S. (U.S. Department of Health and Human Services [DHHS], 2014). Given that over 80% of smokers first experiment with cigarettes and become nicotine-dependent as teenagers (U.S. DHHS, 2012), protecting adolescents from exposures that put them at risk for experimenting with smoking or progressing toward regular use, including advertising and other forms of promotion, is vital for public health.

As restrictions on tobacco advertising in traditional media have increased, the industry has become ever more reliant on the retail environment as a means of marketing its products (Cohen et al., 2008). In 2016, the U.S. tobacco industry paid over \$8 billion in incentives to retailers and wholesalers, representing > 90% of all advertising and promotional expenditures by the tobacco industry that year (U.S. Federal Trade Commission, 2018). Tobacco industry documents make

clear that a main objective of point-of-sale (POS) advertising is to increase the consumption of tobacco products (Lavack & Toth, 2006), and in-store pack displays are the centerpiece of this strategy. These large, prominent, and visually appealing displays of tobacco products, known as tobacco power walls (Dewhirst, 2004), are designed to attract consumers' attention—through “intrusive visibility (Pollay, 2007, p. 270)—and encourage them to purchase tobacco products. The industry even supports retailers in installing these displays via financial contributions, providing free equipment, and awarding retailers for having fully stocked shelves and locating the displays prominently (Feighery, Ribisl, Clark, & Haladjian, 2003).

Exposure to POS tobacco displays is known to be associated with both adolescent smoking and susceptibility to future smoking (Paynter & Edwards, 2009; Robertson, McGee, Marsh, & Hoek, 2015; Shadel et al., 2016). Studies that have attempted to identify the mechanisms by which exposure to POS tobacco displays might affect young people's

* Corresponding author at: RAND Corporation, 4570 Fifth Avenue, Suite 600, Pittsburgh, PA 15213-2665, United States.

E-mail address: martino@rand.org (S.C. Martino).

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Table 1
Descriptive statistics and bivariate correlations for all study variables (N = 80).

Variables	1	2	3	4	5	6	7
1. Baseline smoking susceptibility ^a	–						
2. Negative mood	0.01	–					
3. Frequency of shopping at convenience stores	–0.09	0.10	–				
4. Prior exposure to cigarette advertising at convenience stores	0.11	0.09	–0.05	–			
5. Time spent in the RAND Store Lab (in minutes)	–0.14	0.28*	0.06	–0.10	–		
6. Attention toward the tobacco power wall ^b	0.22	0.10	0.08	–0.13	0.12	–	
7. Post-shopping smoking susceptibility ^a	0.56***	0.11	0.02	0.13	–0.16	0.26*	–
<i>M</i>	0.14	11.68	4.30	2.06	4.26	0.65	0.28
<i>SD</i>	0.35	3.90	1.37	1.02	2.66	0.48	0.45

^a Smoking susceptibility: 0 = no susceptibility, 1 = any susceptibility.

^b Attention toward the tobacco power wall: 0 = less than two seconds, 1 = two or more seconds

* $p < .05$.

*** $p < .001$.

Table 2
Final logistic regression model predicting cigarette smoking susceptibility (Post-RSL) from attention to the tobacco power wall and other covariates.

Predictor	<i>b</i>	<i>SE</i>	Odds ratio [95% CI]	Wald χ^2	<i>p</i>
Baseline smoking susceptibility	3.60	1.19	36.60 [3.56, 376.15]	9.16	0.002
Negative mood	0.14	0.10	1.15 [0.94, 1.41]	2.10	0.147
Frequency of shopping at convenience stores	–0.10	0.27	0.91 [0.53, 1.54]	0.13	0.714
Prior exposure to cigarette advertising at convenience stores	0.37	0.40	1.45 [0.66, 3.16]	0.85	0.357
Time spent shopping in the RSL (in minutes)	–0.18	0.15	0.84 [0.63, 1.12]	1.38	0.241
Attention toward the tobacco power wall	2.04	1.02	7.69 [1.04, 56.83]	3.99	0.046

Note. RSL = RAND Store Lab; N = 80.

susceptibility for use have focused on perceptions of the attractiveness of cigarette packs, smoking-related norms, and the perceived accessibility of cigarettes (McNeill et al., 2011; Setodji et al., 2018; Wakefield, Germain, Durkin, & Henriksen, 2006), all factors that are known to increase the likelihood of smoking (Doubeni, Li, Fouayzi, & DiFranza, 2008; Germain, Wakefield, & Durkin, 2010; Olds, Thombs, & Tomasek, 2005).

An important unanswered question concerns the role of attention in mediating the effects of exposure to the tobacco power wall. Attention is the first step in classic stimulus-response models that describe the sequence of steps that must occur for an advertisement or marketing communication to affect purchasing behavior (McGuire, 1978; Priyanka, 2013). It is thought by many—but not all (e.g., Heath & Nairn, 2005)—to be a necessary ingredient for effective advertising (Mackenzie, 1986; Teixeira, 2014; Zhang, Wedel, & Pieters, 2009). Experimental studies have demonstrated a relationship between visual attention and in-store decision-making. These studies suggest that the amount of attention that consumers pay to in-store advertising can affect sales of featured products (e.g., Chandon, Hutchinson, Bradlow, & Young, 2007; Russo & Leclerc, 1994). Attracting consumers' attention to POS displays is certainly a goal of tobacco companies. Power walls are designed to be maximally eye-catching, and tobacco companies pay large sums of money to have the power wall appear in the most prominent in-store locations (e.g., behind the cashier; often close to products intended for children; Stead et al., 2016).

In addition to theoretical considerations, clarifying the role of attention in the efficacy of tobacco power walls has important policy implications. Researchers and public health officials have proposed potential regulatory actions that are clearly aimed at reducing the salience of POS displays, such as reducing the size of the power wall and requiring plain packaging for all cigarette brands (Lange, Hoefges, & Ribisl, 2015; Smith, Kraemer, Johnson, & Mays, 2015). If it is the mere presence of a tobacco power wall that increases susceptibility to smoking (e.g., by suggesting that it is normative and that cigarettes are easily accessible) and amount of attention does not matter, then efforts to decrease the salience of in-store tobacco displays may have little impact on reducing tobacco use and improving public health. If, on the

other hand, amount of attention matters, strategies for decreasing the salience of in-store displays become viable options to consider.

The current study examines the association between the amount of attention paid by adolescents to the tobacco power wall and susceptibility to future smoking. The setting for this study was the RAND Store Lab (RSL), a life-sized replica of a convenience store that was designed to evaluate how best to regulate tobacco product advertising at POS during simulated shopping experiences (Shadel et al., 2016). In this study, middle and high school students (90% of whom had never smoked) shopped in the RSL while their attention to the tobacco power wall was measured covertly. Susceptibility to future smoking was evaluated pre- and post-shopping so that we could evaluate the association between post-shopping susceptibility and amount of attention paid to the tobacco power wall while controlling for pre-shopping susceptibility. We hypothesized that adolescents who paid greater attention would demonstrate greater susceptibility to smoking than would adolescents who paid less attention. We measured and controlled for several characteristics of adolescents that could potentially confound the association between attention paid to the tobacco power wall and susceptibility to smoking (e.g., negative mood and prior exposure to cigarette advertising in convenience stores).

2. Methods

2.1. Overview

Participants for this study were a subset of individuals from a larger experimental study that examined whether changing the placement or visibility of the tobacco power wall influences smoking risk in adolescents (Shadel et al., 2016). The experiment was conducted in the RAND StoreLab (RSL; see description below), a true-to-life convenience store that was developed to experimentally evaluate how changing aspects of tobacco advertising at POS influences tobacco use risk and behavior. A randomized, between-subjects experimental design with three conditions that varied the location or visibility of the tobacco power wall within the RSL was used. The conditions were: 1) behind the cashier (the control condition); 2) on a side wall away from the cash register; or

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