



Published in final edited form as:

Tob Regul Sci. 2016 October ; 2(4): 414–425. doi:10.18001/TRS.2.4.11.

Evaluating Point of Sale Tobacco Marketing Using Behavioral Laboratory Methods

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Abstract

With passage of the 2009 Family Smoking Prevention and Tobacco Control Act, the FDA has authority to regulate tobacco advertising. As bans on traditional advertising venues and promotion of tobacco products have grown, a greater emphasis has been placed on brand exposure and price promotion in displays of products at the point-of-sale (POS). POS marketing seeks to influence attitudes and behavior towards tobacco products using a variety of explicit and implicit messaging approaches. Behavioral laboratory methods have the potential to provide the FDA with a strong scientific base for regulatory actions and a model for testing future manipulations of POS advertisements. We review aspects of POS marketing that potentially influence smoking behavior, including branding, price promotions, health claims, the marketing of emerging tobacco products, and tobacco counter-advertising. We conceptualize how POS marketing potentially influence individual attention, memory, implicit attitudes, and smoking behavior. Finally, we describe specific behavioral laboratory methods that can be adapted to measure the impact of POS marketing on these domains.

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Human Subjects Statement

This work did not involve any human subjects.

Conflict of Interest Statement

All authors received funding from the United States National Institutes of Health (NIH). Drs. Robinson and Cinciripini receive funding from the Cancer Prevention and Research Institute of Texas (CPRIT). Dr. Cinciripini served on the scientific advisory board of Pfizer, Inc., and conducted educational talks sponsored by Pfizer on smoking cessation (2006–2008). Dr. Brandon has received research support (study medication) from Pfizer, Inc., and has provided consultation to Voxiva, Inc., and the Australian Government Solicitor on tobacco-related issues. Dr. Drobes has been paid as an expert witness in litigation against tobacco companies.

Keywords

tobacco products; point-of-sale marketing; behavioral laboratory methods; attention; memory; implicit attitudes; smoking

INTRODUCTION

Relevance to the FDA's mission

As restrictions on traditional advertising venues and promotion of tobacco products have grown, a greater emphasis has been placed on brand exposure and price promotion in displays of products at the point-of-sale (POS).^{1–3} Tobacco companies spent over 85% of their more than \$9 billion cigarette advertising and promotional dollars in 2012 on POS marketing.⁴ Repeated exposure to POS marketing establishes familiarity with tobacco product, promotes social acceptability towards product use,⁵ potentially reduces the negative health connotations associated with tobacco,^{3,6} encourages unplanned (impulse) purchases,^{7,8} deters quitting among established adult smokers,⁹ promotes experimentation in young adults,^{10–12} and increases the likelihood¹³ and the amount¹⁴ of smoking immediately following exposure.

With passage of the 2009 Family Smoking Prevention and Tobacco Control Act (FSPTCA),¹⁵ the FDA has authority to regulate tobacco advertising. Behavioral laboratory methods (BLMs) have the potential to provide the FDA Center for Tobacco Products (CTP) with a strong scientific base for regulatory actions and a model for testing future manipulations of POS advertisements, including the wording, colors, and images used in such advertisements. Given that the tobacco companies have clearly targeted POS marketing venues as a good investment, it seems critical for the FDA to understand more about how POS may influence the thinking and behavior of individuals with respect to tobacco use initiation, escalation, maintenance, cessation and relapse.

Here, we review aspects of POS marketing that potentially influence smoking behavior, including branding, price promotions, health claims, the marketing of emerging tobacco products, and tobacco counter-advertising. We conceptualize how these aspects of POS marketing potentially influence individual attention, memory, implicit attitudes, and smoking behavior. Finally, we describe a selection of BLMs that can be adapted to measure the impact of POS marketing on these domains.

How point of sale (POS) marketing potentially influences smoking behavior

Product branding—Product branding refers to the explicit (eg, logo) and implicit (eg, aspirational connotations) messaging marketers create around a product to distinguish it from competitors, to reduce commoditization by implying distinctiveness and quality, and to create product loyalty.¹⁶ Branding allows cigarettes to transcend being mere drug administration devices to become part of a smoker's identity and self-expression.¹⁷ Tobacco companies cultivate brand messaging to target specific populations, such as women¹⁸ and minorities,¹⁹ and adjust these messages to target different age groups²⁰, socioeconomic statuses,²¹ and psychosocial needs.²² Evidence suggests that smokers are willing to pay

more for branded compared to unbranded cigarettes,^{23;24} and that plain packaging reduces the appeal of cigarette packs.²⁵

Price promotions—POS tobacco marketing uses price promotion to influence smokers.²⁶ The tobacco companies spent 81% of their marketing budget in 2010 to reduce retail cigarette prices.²⁷ Surveys indicate that between one-third to one-half of smokers consistently use promotional offers, particularly among young and low SES tobacco users,^{28–30} and that discounts are more prevalent in predominately low SES vs. high SES neighborhoods.³¹ By encouraging use, discounting may reduce or impede cessation attempts particularly among young adults, who may otherwise make more spontaneous quit attempts, and may move lighter smokers and brand switchers to highly promoted products (“full flavor” or premium brands).^{2;32}

Emerging products (Electronic Cigarettes)—Electronic nicotine delivery systems (ENDS), also known as electronic cigarettes (e-cigs), were introduced to the USA in 2007, and by 2012 75% of adults and 88% of current smokers were aware of them,³³ with sales doubling every year.³⁴ While initial research suggests that e-cigs are safer than combustible cigarettes,³⁵ and that some smokers are using e-cigs to reduce or eliminate use of combustible cigarettes,³⁶ concerns exist about e-cigs protracting nicotine dependence among smokers, normalizing nicotine use across society, and acting as a gateway to combustible tobacco use among youth.³⁷ E-cig marketing has dramatically increased since the product’s introduction, and is being marketed in ways that are prohibited to combustible cigarettes, including television advertising and product placement, and public advertising (eg, sporting events). E-cig marketing is also capitalizing on features that are unique to this product, including dual use (ie, use of nicotine in environments where smoking is banned), product customizability (eg, flavoring, battery type), product innovation (eg, vaporizers that communicate with one’s smartphone or other users), and health claims (ie, e-cigs are safer than combustible cigarettes).³⁸ The study of the relationship between e-cig POS advertising and product adoption and use is an emerging topic in the tobacco control field,³⁹ but given the impact of POS cigarette advertising on smoking,¹² it is likely to be of interest to the FDA CTP.

Modified risk products and implied health benefits—POS tobacco marketing is designed to reduce health concerns. An important theme in cigarette marketing has been to allay smokers’ concerns about the health implications of smoking. Noteworthy examples include past use of the now banned terms “light” and “ultra light” to imply a healthier cigarette, to the introduction of present day PREPs (potential reduced exposure products), such as Swedish Match’s snus, which is currently undergoing FDA regulatory review⁴⁰ as a modified risk tobacco product (MRTP).⁴¹ Despite the removal of implied health claims from cigarette advertising and packaging, smokers continue to attribute reduced health risk based on colors (eg, blue) and color words incorporated into the product name (eg, Camel Blue).^{42;43} While the 2009 FSPTCA stipulates that MRTP claims must now meet FDA guidelines, PREPs may be thought of as yet “unvalidated” modified risk products.⁴⁴ This includes engineered nicotine delivery devices, such as e-cigs and dissolvable tobacco products, which are often marketed as healthier alternatives than smoking and as alternatives to quitting.⁴⁵ In

fact, smokers are increasingly associating PREPs with reduced health risk.⁴⁶ Among adult smokers, there is evidence that PREPs, such as e-cigs, are complementing (ie, dual use), rather than replacing, cigarettes.⁴⁷ Given the potential for MRTPs and POS advertising of such products, and the continued association between advertising features (eg, colors) and product health perceptions, the FDA CTP would benefit from research in these areas.

Tobacco counter-advertising and warning labels—The influence of POS tobacco marketing can potentially be reduced by tobacco counter-advertising, though research to date has been limited.⁴⁸ With mass advertising campaigns, tobacco counter-advertising has been used to de-normalize smoking⁴⁹ and to undermine tobacco brand messaging, particularly through the building of anti-smoking brand equity (eg, the Truth campaign).^{50;51} Amount of exposure to tobacco counter-advertising has been associated with decreased intention to smoke among adolescents,⁵² denormalization of attitudes toward tobacco, and decreased smoking.⁵³ In terms of POS marketing, schools nearer to stores with more in-store promotions and less counter-advertising had greater smoking prevalence.⁵⁴ In experimental field auctions, a method whereby groups of participants receive money to bid on actual products that vary in terms of presentation of a key feature or a competing message, tobacco counter-advertising at POS has been found to reduce the perceived value of PREPs among smokers who had been exposed to product reduced risk claims.⁵⁵ Similarly, experimental auctions have shown that graphic warning labels reduce the perceived value of cigarettes.⁵⁶

Using behavioral laboratory methods to evaluate POS tobacco marketing

Similar to other motivationally relevant stimuli, POS advertisements can be conceptualized as having four major functions: 1) capturing the attention of the consumer; 2) enhancing memory for a product; 3) influencing attitudes and beliefs regarding the product; and 4) motivating behavior related to use of the product. These constructs can be studied with a high degree of precision in the behavioral laboratory using well-established paradigms. Paradigms that have been used to evaluate response to drug cues may be particularly relevant, to the extent that POS advertisements can be conceptualized as a type of smoking cue. Smoking cues are stimuli that, through conditioning processes associated with drug use, acquire motivational relevance to the chronic user.⁵⁷ When compared to neutral stimuli, drug-related cues have been found to increase attention,⁵⁸ physiological activation,⁵⁹ recognition memory,⁶⁰ demand for cigarettes (using the cigarette purchase task),⁶¹ self-reported mood and craving, and drug-seeking behavior,⁶² among smokers, collectively called cue reactivity. A key supposition of cue reactivity is that a chronic drug-user's attention is drawn to stimuli previously associated with drug use, making the drug cues more salient than other stimuli. An extensive research base exists that relates cues (eg, pictures of cigarettes and associated social or environmental context) to reactions that motivate further drug seeking and consumption.^{63;64}

Despite the rich and varied application of BLMs to the study of cue reactivity, most studies of POS advertisements have relied on qualitative (eg,⁶⁵) and self-report methods (eg,^{11;42;66}) to assess associated attributes and attitudes. Although informative, these approaches may be subject to social approval biases, such as expectancy effects (ie, it may be more socially

acceptable to express negative attitudes toward tobacco products) and demand characteristics (ie, wanting to please the experimenter),⁶⁷ as well as memory recall biases.⁶⁸ A few behavioral laboratory studies have examined self-report craving reactions to POS tobacco advertisements. For example, increased craving has been noted in studies using virtual reality presentations of cigarette packs or cartons available at vendor stands.⁶⁹ In a virtual reality study, greater cravings were noted in response to a convenience store (POS context), both with and without smoking cues (ie, tobacco advertising), compared to a neutral scene.⁷⁰ Greater craving and neural activation in response to smoking ads was observed relative to control ads but only for moderately dependent smokers.⁷¹

Although measuring whether POS advertisements evoke craving is informative, it is also critical to assess objective variables that may occur concomitantly with subjectively-experienced craving, as these cue reactions may be less susceptible to demand effects and other biases associated with self-report. Using BLMs to measure diverse indices of attention, memory, attitudes, and behavior offers many advantages over traditional reliance upon self-report surveys. BLMs emphasize experimental control of the temporal sequence between manipulation and measurement, often repeatedly, and of potentially confounding variables.⁷² BLM is often less expensive and quicker to conduct than field studies, and the BLM infrastructure can be re-tooled for other studies, which lends itself to the programmatic study of POS marketing aspects. BLMs allow for the use of experimental approaches that avoid many of the expectancy and demand biases associated with traditional self-report measures of perception, attitudes, and recall. Disadvantages of BLMs include an emphasis on internal over external validity and use of smaller, and potentially less representative, samples than other approaches, such as surveys, which may limit its “real world” relevance. In conclusion, BLMs avoid many of the biases inherent to the sole reliance on self-report of attention, memory, attitudes, and behavior, and allow for causal conclusions to be drawn, which qualitative or survey studies do not.

ASPECTS OF POS TOBACCO MARKETING THAT CAN BE STUDIED USING BEHAVIORAL LABORATORY METHODS

Evaluating how POS tobacco marketing draws attention

POS tobacco advertising is typically replete with direct (eg, exposed cigarettes) or indirect (eg, brand image) visual smoking cues, as well as related content (eg, price, tagline or commercial message) and health warnings, designed to attract attention. Simply noticing POS cigarette marketing has been found to be associated with susceptibility to smoke among youth.⁷³ All such cues can be conceived as being in competition, based on the idea that humans have a limited amount of cognitive resources for perceiving, comprehending, and remembering information they encounter in their environment.^{74;75} The more motivationally relevant a stimulus is to an individual, the more automatic mental processes will be devoted to it.⁷⁶ Bias or preference for one type of stimulus content over another is initially revealed when more attentional resources are devoted to processing a specific stimulus. Within the context of cue reactivity, a key supposition is that a chronic drug-user’s attention is drawn to stimuli previously associated with drug use, making the drug cues more salient than other

stimuli,^{57;77} in a phenomenon called attentional bias (AB).^{78;79} Specific BLMs that measure AB and that are adaptable to studying aspects of POS marketing are reviewed below.

Modified dot-probe (MDP) task—The MDP, used to assess AB, is a measure of visual attention where a pair of photographs, one bias-related (ie, drug-related) and one neutral, are briefly presented simultaneously on a screen. After both pictures are removed from the screen, a small visual probe is presented in the former location of one of the pictures, with participants instructed to respond to the probe as quickly as possible with a button press. Each picture is probed an equal number of times. Drug dependent participants consistently respond faster to probes occurring in the place of drug-related pictures compared to neutral pictures, including smokers,⁸⁰ heavy drinkers,⁸¹ and the opiate dependent,⁸² suggesting that drug-related stimuli capture attention in those with drug problems. While the MDP has not yet been adopted to study POS marketing, its methodology allows for the controlled evaluation of the attentional effects of even minor variations in POS marketing. For example, the MDP could be used to evaluate the effects of discounting (ads with discounting vs. ads without discounting), risk claims (ads with modified risk claims vs. ads without such claims), product exposure (ads with exposed product vs. ads without exposed product), ad coloring (light colors implying “light” cigarettes), and branding of emerging products (emerging products with established branding vs. emerging products without established branding) on AB.

Eye tracking technology—Eye tracking cameras, which measure AB by capturing eye gaze patterns (eg, fixation, dwell duration) to specific image features or to simultaneously displayed images, have been used to study smoking cues^{83;84} and can be readily adapted to studying aspects of POS marketing. For example, one study compared larger graphic health warning (GHWs), smaller GHWs, or text-only warning labels embedded in cigarette advertising using eye tracking technology and found that GHWs attracted more attention than text-only warning, but there was no difference between sizes of GHWs.⁸⁵ One study found that, compared to text warning, graphic warning labels improve smokers’ recall of health risks, with concomitant eye tracking data suggesting that the reason for this increased recall was the increased attention-attracting characteristics of the graphic warnings.⁸⁶ Another eye tracking study found that compared to branded packaging, plain packaging increased the attention paid to warning labels, but only among non-daily and nonsmokers, and not daily smokers.⁸⁷

Evaluating how POS tobacco marketing increases memorability

POS tobacco marketing is designed to increase memorability. Memorability is known to increase likability--a process known as the mere exposure effect.^{88;89} In one study, non-smoking adolescents showed better recall of ads when accompanied by pack displays, and these displays decreased intention to remain smoke-free.⁹⁰ This effect has been noted among children and adolescents exposed to tobacco advertising.⁹¹ However, the memorability of advertising is reduced in the presence of competing advertising.⁹² A key method to reduce the effect of competing advertising is to rely upon established branding, because established branding is less susceptible to competitive interference than novel branding.⁹³ POS marketing reinforces brand awareness⁹⁴ but requires maintenance of exposure for continued

recognition.⁹⁵ An important technique for building memorable brand awareness is through brand salience, which is conceptualized as making a brand relevant to a person's self-concept, relationships, aspirations, and enjoyment.⁹⁶ Tobacco manufacturers tailor salience (ie, brand image) to particular subgroups of smokers (eg, female smokers, value-conscious smokers, health-conscious smokers).¹ Although smokers, particularly adolescent smokers, have been found to have better memory for cigarette marketing compared to non-smokers,⁹⁷ the exact aspects of POS marketing that influence memorability are unknown. BLMs can be adapted to study memory for aspects of POS marketing, two of which are described below.

The new/old recognition memory (NORM)—Smokers seeking to purchase cigarettes are typically exposed to multiple POS tobacco advertisements. The presence of competing advertisements for similar products reduces the likelihood that any given ad will be attended to and encoded in memory.⁹⁸ One way to model this POS environment using BLMs is the new/old recognition memory (NORM) task, an established approach for evaluating marketing memorability.^{99;100} The NORM task consists of two phases, the exposure and test phases, and can be readily adapted to evaluating aspects of POS tobacco marketing that may influence memorability. For example, during the exposure phase, participants could be briefly exposed to a series of POS tobacco marketing pictures that systematically vary by feature. During the test phase, which would occur after a suitably long interval (ie, a subsequent session) or after the participants have engaged in a distracting task (ie, within session), the participants would be asked to identify a series of pictures, half of which they saw during the exposure phase, as either “new” or “old” (ie, whether it was previously viewed in the study phase). The accuracy of these identification trials would be used to calculate signal detection metrics, namely discrimination and response bias, that are expected to vary by POS tobacco marketing feature saliency.

Cued recall tasks—Evaluating which specific aspects of a POS marketing message are memorable can be accomplished using cued recall tasks. These tasks have been used to show that competing advertising can interfere with memory encoding.^{98;101} Similar to the NORM task, participants would be exposed to a series of advertising images, with certain brands matched with specific aspects of POS marketing. After a period of time and/or competing tasks, the participant would be presented with a series of new or previously viewed brand names and asked to write down whatever comes to mind about each product. Recall accuracy would be determined by having independent raters categorize the participants' responses as to their similarity to the marketing feature paired with the brand.

Evaluating how POS tobacco marketing imparts positive implicit attitudes toward tobacco use

POS tobacco marketing imparts positive implicit attitudes toward tobacco use. Studies have shown that smokers have less negative implicit attitudes towards smoking, and that implicit attitudes are associated with multiple aspects of smoking behavior among smokers.⁵⁸ Cigarette marketing has been designed around key themes, including taste and satisfaction, implied harm reduction (reducing smokers' health concerns),¹⁰² affinity with desirable social characteristics,²¹ brand loyalty,¹⁷ and smokers' rights. Additionally, specific marketing campaigns have been designed specifically to target smokers based on age (eg,

independence or peer acceptance for young smokers), gender (eg, focusing on masculinity and individualism for men; weight control or elegance for women), race or ethnicity, and sexual orientation.² However, the overarching impact of POS marketing appears to be the normalization of attitudes toward smoking.¹⁰³ A major objective of this marketing is to develop positive implicit attitudes towards the tobacco product by enhancing identification of the smoker with the characteristics of a particular brand or to portray smoking in general with positive social experiences, sexual attraction, excitement, exclusivity and similar positive characteristics. The impact of these POS marketing features on attitudes can be assessed using the Implicit Attitude Test (IAT).

Implicit Attitude Test (IAT)—The IAT has been used to evaluate implicit consumer attitudes toward product features.^{104;105} The IAT is comprised of two tasks. In the first task, participants are instructed to rapidly distinguish between two paired concepts (eg, ads with discounting messages + good vs. ads without discounting + bad) using two assigned buttons. In the second task, the concept pairings are switched (eg, ads with discounting + bad vs. ads without discounting + good). By calculating a standardized difference score between the reaction time differences of the paired concepts, one can make inferences regarding which concepts are more strongly associated in memory, thus determining whether an individual has a positive or negative attitude toward it.¹⁰⁶ The IAT is readily adaptable to evaluating POS marketing images and words. For example, one could evaluate whether using recognized brand labels (eg, Marlboro, Camel) on POS materials enhances positive implicit attitudes compared to lesser-known brands or plain packaging. This may inform the extent to which such branding attracts the attention of smokers, particularly younger smokers, who may use them as “starter” products⁶⁶ or defer quitting and/or engage in dual use.

Implicit attitudes, as measured by the IAT, have been found to be less sensitive to demand characteristics than explicit attitudinal measures¹⁰⁷ and have greater predictive validity than self-report for a variety of behaviors, particularly those that are socially sensitive and subject to self-censorship, like substance abuse.^{108;109} Several studies have found that, despite smoking being associated with negative implicit attitudes on the IAT by smokers and nonsmokers alike, smokers produce less negative attitudes in response to smoking stimuli than nonsmokers.^{109–112} Implicit attitudes toward smoking have been related to craving¹¹² and nicotine dependence,¹¹² and negative attitudes have predicted cessation outcome.¹¹³ In contrast, POS marketing may increase positive implicit attitudes towards the product by promoting greater self-identification with smoking.¹¹⁴

Evaluating how POS tobacco marketing influences smokers' behaviors

Behavioral economics and POS tobacco marketing—Behavioral economics, a hybrid of psychology and microeconomics,¹¹⁵ is a burgeoning field that has developed several objective tasks to assess reward preferences. These tasks assess the relative reinforcement value of commodities (ie, demand), and have enhanced the understanding of processes involved in general decision-making¹¹⁶ and decision-making specific to drug consumption.¹¹⁷ Traditionally, the impact of cigarette pack price on tobacco use has been examined at a population level. For example, cessation rates have been noted to increase and tobacco consumption decrease, as cost increases such that there is a 2.5–5% decrease in

tobacco consumption for a 10% price inflation.¹¹⁸ Behavioral economics provides an alternative approach that examines individual-level preferences and consumption using purchase tasks, offering an internally-valid model to investigate the effects of environmental stimuli (eg, marketing/price) on drug demand.¹¹⁹ Validated purchase tasks, such as the Cigarette Purchase Task (CPT),¹²⁰ quantify participants' estimated drug consumption across varying levels of cost by providing a multidimensional assessment of drug demand,¹²¹ including breakpoint (first price at which cigarette consumption is zero), demand intensity (cigarette consumption at the lowest price), O_{\max} (maximum financial expenditure on cigarettes), P_{\max} (price at which expenditure is maximized), and elasticity of demand (sensitivity of cigarette consumption to increases in cost). These CPT indices have been found to capture separate motivational channels from traditional self-report craving measures,¹²² suggesting that a comprehensive assessment of drug motivation should include both measures. Elevated CPT demand indices have been associated with increased substance use, dependence, and craving^{123;124} and prospectively predicted poor treatment outcome.¹²⁵ Additionally, experimental manipulations of smoking stimuli and nicotine deprivation increase demand indices,¹²² suggesting that purchase tasks can be used to identify environmental contexts that alter drug demand (eg, marketing and price promotion stimuli).

Another class of relevant behavioral economic measures includes delayed discounting tasks (DDTs). These tasks have participants choose between a series of smaller immediate monetary rewards versus larger delayed monetary rewards.¹²⁶ Participants with preferences for immediate rewards indicate more delayed discounting and therefore higher levels of impulsivity. Consistent with demand indices, elevated delayed discounting has been associated with higher levels of substance use, dependence, and craving,¹²³ and prospectively predicts poor treatment outcome.¹²⁷ Although delay discounting has typically been conceptualized as reflecting the relatively-stable trait of impulsivity, there is also evidence that it can be influenced by current situational factors, such as nicotine deprivation,¹²⁸ suggesting that it may be fruitful to examine how POS marketing influences this motivational variable.

An emerging behavioral economic approach to measuring tobacco marketing is the best-worst scaling (BWS) method, also known as Maximum Difference Scaling.¹²⁹ In this approach, participants are asked to select both the best and worst options of a product from among a set of options that are systematically paired with each other. The task yields a coefficient for each feature that reflects its relative preference to the individual, and has been found to offer advantages over other types of hypothetical choice tasks.¹³⁰ In terms of tobacco product features, recent work has used the BWS method to identify preferred descriptors that appear on plain-packaged cigarettes in Australia.¹³¹ This approach could be readily adopted to evaluate the relative appeal of specific aspects of POS tobacco marketing.

Assessing the effects of POS tobacco marketing on smoking behavior in the lab—Various procedures have been used to measure smoking behavior within controlled laboratory settings. Early studies employed a “taste test” technique, in which smokers were asked to smoke in order to make taste ratings (eg,¹³²). The ratings were actually irrelevant, but smoking quantity and other observable measures (eg, latency to first puff, number of puffs, time spent smoking) were recorded and analyzed. These and other features (eg, puff

volume, puff velocity) can now be measured more objectively and comprehensively using smoking topography recording devices,¹³³ but there are still advantages of direct observations of smoking behavior when unobtrusive measurement is desirable. More recently, McKee and colleagues^{134–136} developed a laboratory analog of smoking lapse, designed to model conflicting motivation surrounding cigarette use following smoking abstinence. In this paradigm, smokers are provided with a monetary incentive for each 5 min period they choose not to smoke, up to a maximum of 50 min (“delay” period). After the initial smoking episode (or at the end of the “delay” period), additional cigarettes may be smoked during a one hour “self-administration” period, again with an alternative cash incentive available for not smoking. Indices of delay and smoking during the self-administration period have been validated as responsive to several known manipulations of smoking motivation, including abstinence, stress, alcohol consumption, and smoking cessation medications.^{134–136} Because this paradigm provides an objective and sensitive assay for smoking behavior in a laboratory setting, it provides an ideal outcome measure for examining the effects of exposure to tobacco-related POS marketing stimuli on smoking behavior.

CONCLUSIONS

POS tobacco marketing is predicated upon two factors: (1) advertising can influence behavior without conscious awareness and (2) nicotine dependence influences the brain’s motivational systems and, as such, influences the mind beyond rational decision making. Research to date has largely relied upon qualitative studies and survey methodology. These approaches have the advantages of maximizing external validity and sampling participants’ subjective experiences. On the other hand, they are limited by low interval validity, limited causal inference, and reliance on self-report, with its inherent biases. BLMs usually minimize these limitations, while also providing data on non-conscious mechanisms that may underlie tobacco use motivation. Moreover, they utilize research paradigms that can collect data relatively quickly and can be easily adapted for different tobacco products or POS marketing approaches.

IMPLICATIONS FOR TOBACCO REGULATION

By using behavioral laboratory methods (BLMs) to assess the impact of POS marketing on individual attention, memory, implicit attitudes, and smoking behavior, researchers can quickly provide regulators with comprehensive data that allow for causal conclusions about the immediate effects of POS tobacco marketing upon variables underlying product-use motivation. Specifically, BLMs could inform regulators the extent to which POS advertising features appeal to minors (eg, branding or imaging), imply misleading claims (eg, unsubstantiated health benefits), reduce the effectiveness of counter-advertisements, or promote product initiation or impulse purchases (eg, price promotions).

Acknowledgments

Jason D. Robinson, Paul M. Cinciripini, and David J. Drobes were supported by a grant (U54DA031659; PI: Donny and Hatsukami) from the United States National Institute on Drug Abuse and the Food and Drug Administration

Center for Tobacco Products. Thomas H. Brandon is supported by National Institute on Drug Abuse grant R01DA037961.

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