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### Development And Psychometric Evaluation Of A Questionnaire To Assess Attitudes Towards Tobacco Policies

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**Development and Psychometric Evaluation of a Questionnaire to Assess  
Attitudes Towards Tobacco Policies**

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## **Abstract**

**Introduction:** Over the past two decades, the landscape of tobacco control has rapidly changed. Currently there exists no widely-used measure to assess attitudes towards smoking and tobacco policies in the United States. The primary goal of this research project was to develop and validate a timely questionnaire to measure these attitudes, with a particular focus on e-cigarettes and flavorings/additives.

**Methods:** Building upon the previously validated Smoking Policy Inventory (SPI; 1994), items were developed to assess attitudes toward current and/or controversial issues in tobacco policy. Items querying issues that are generally considered settled (e.g., smoking in restaurants) were removed from the original version, and 9 items pertaining to e-cigarettes were added. The resulting 34-item tool, titled the Yale Smoking Policy Survey (YSPS), was then validated in a sample of 343 respondents.

**Results:** Exploratory and confirmatory factor analyses support a final questionnaire with 30 items and 6 subscales, collectively explaining 75.2% of the total variance in response. Each subscale demonstrates good or excellent internal reliability (Chronbach's alpha ranged from 0.813 to 0.934). Strong test-retest reliability, construct validity, and criterion validity were also established.

**Conclusions:** The YSPS is a psychometrically sound measure that fills a growing need in the field of tobacco regulatory science. Given recent changes in tobacco regulation, it is critical to adopt a new tool that can evaluate contemporary issues. The Yale Smoking Policy Survey is a reliable, valid, and versatile tool for assessing attitudes towards tobacco policy.

## **Implications**

The Yale Smoking Policy Survey (YSPS) evaluates attitudes toward several aspects of smoking and tobacco regulation that have not, to our knowledge, previously been included in a validated survey, including smoking in motor vehicles with children, smoking bans on college campuses, insurance coverage for quit-counseling and pharmaceutical resources, and the regulation of e-cigarettes. Such items allow the tool to capture attitudes on current issues in addition to perennial ones. The YSPS can help policymakers and researchers understand their constituents' and subjects' overall attitudes towards tobacco regulation. It may be used in cross-sectional or longitudinal studies to inform tobacco control research and policy decisions.

## **Introduction**

Despite recent declines in smoking prevalence, cigarette smoking remains the leading cause of preventable death in the United States (National Center for Chronic Disease, Health Promotion Office on, & Health, 2014). Each year cigarette smoking causes more than 480,000 deaths in the United States and incurs costs of more than \$300 billion between lost productivity and medical care (National Center for Chronic Disease et al., 2014; Xu, Bishop, Kennedy, Simpson, & Pechacek, 2015). Smoking rates differ significantly by race and ethnicity, education level, and poverty status, resulting in certain demographic groups being disproportionately affected by tobacco use and related illness (Jamal et al., 2015).

Since the United States Food and Drug Administration (FDA) began its efforts to assert regulatory authority over tobacco in the early 1990s, the landscape of tobacco control has changed drastically (Rabin & Sugarman, 2001). In 1992, the Synar Amendment to the Alcohol, Drug Abuse, and Mental Health Administration Reorganization Act (ADAMHA) was passed, making ADAMHA grants to states contingent on establishing laws that prohibit the distribution and sale of tobacco products to children under 18 (Rabin & Sugarman, 2001). From 1995 to 1998, 47 states sued three major tobacco companies over Medicaid costs incurred by smoking-related illness. In 1998, 46 of these states settled, resulting in the Master Settlement Agreement (MSA) (Rabin & Sugarman, 2001) Effectively, the MSA forbid the three tobacco companies from targeting youth. This was achieved mainly through a ban on outdoor advertising, severe restrictions on sponsorship of events (such as televised sporting events), and prohibition of the use of characters in advertisements and promotional materials.

For a decade, the MSA remained the most significant political advancement in the field of tobacco control, until 2009, when Congress passed the Family Smoking Prevention and

Tobacco Control Act (TCA). Amending the Federal Food, Drug, and Cosmetic Act, the TCA established FDA's regulatory authority over tobacco products, which it defined as "any product made or derived from tobacco that is intended for human consumption" ("Family Smoking Prevention and Tobacco Control Act," 2009). Additionally, the TCA called for the creation of a new division within the FDA, to be called the Center for Tobacco Products, and charged this division with implementation of the legislation. This included provisions requiring manufacturers to disclose all ingredients and to receive approval from the FDA prior to sale of new products, banning flavors other than menthol in regulated tobacco products, and further limiting methods of advertising to reduce youth exposure ("Family Smoking Prevention and Tobacco Control Act," 2009). At first a victory for tobacco control advocates, the TCA faced significant backlash from the tobacco industry in the form of litigation. Several aspects of the legislation have been set back in this manner, including the implementation of graphic warning labels on cigarette packages (Tobacco Control Legal Consortium, 2014).

The landscape of tobacco control changed again starting in 2007, when electronic cigarettes began to be sold in the United States (Pepper & Brewer, 2014). Since then, the popularity of electronic cigarettes, or e-cigarettes, has skyrocketed. Between 2010 and 2013, estimates of product awareness among U.S. adults rose from 50% to 80%, while estimates of current use increased nearly three-fold, from 1% to 2.6% (King, Patel, Nguyen, & Dube, 2015). Estimates of adolescent use are also concerning. In Connecticut – a state with relatively progressive anti-smoking legislation – 1.5% of middle school and 12% of high school students currently used e-cigarettes in 2013 (Krishnan-Sarin, Morean, Camenga, Cavallo, & Kong, 2015). The comparatively high cigarette taxes and wide restrictions on smoking in Connecticut suggest that, in states with fewer restrictions, rates of adolescent e-cigarette use might be much higher

(Farrelly et al., 2013). Such trends are alarming, especially in the absence of any e-cigarette regulation. While the distribution and sale of flavored cigarettes is prohibited under the TCA due to the attractiveness of flavored products to youths, e-cigarettes are still sold in flavors such as candies and baked goods (King, Tynan, Dube, & Arrazola, 2014).

Concerns over the ability of these products to attract adolescent smokers have clashed with advocates of harm reduction. E-cigarettes have been touted by their manufacturers as smoking cessation aides, since the nicotine content of e-liquid can be reduced over time to help the user wean. Additionally, absence of some combustible cigarette components known to be harmful has brought some public health professionals to believe that the health risks posed by e-cigarette use are fewer than those posed by combustibles (McNeill et al., 2015). Still, a lack of e-cigarette regulation allows manufacturers to sell products that contain other unknown, potentially dangerous constituents, and to leave their products poorly labeled (Bhatnagar et al., 2014; Cheah, Chong, Tan, Morsed, & Yee, 2014). Such debates have prompted researchers and policymakers across the country to consider the needs for, and implications of, regulation.

As new regulations are established, resistance from tobacco companies and the public itself follows. Currently there exists no widely used tool to assess individual attitudes towards smoking policies in the United States. Such a tool would be beneficial for use in cross-sectional or longitudinal studies to inform tobacco control research and policy decisions. Most tools that have been developed either have not demonstrated psychometric reliability and validity, or have been developed for limited use. For example, Majeed et al. created a public opinion survey around a few central questions, including, “do you think e-cigarettes should be allowed to be used in public areas where tobacco smoking is prohibited?” (Majeed, Dube, Sterling, Whitney, & Eriksen, 2015). Although this method provides targeted results relevant to e-cigarette regulation,

it is somewhat limited in that it does not include factors relevant to other aspects of tobacco regulation and policy.

The Smoking Policy Index (SPI), created in 1994 by researchers at the Cancer Prevention Research Consortium at the University of Rhode Island, was intended to serve as a widely used and adaptable tool to assess smoking policy attitudes (Velicer, Laforge, Levesque, & Fava, 1994). The SPI includes five subscales of seven items each: 1) attitudes towards advertising and promotion, 2) taxes and fees, 3) public education, 4) restrictions on smoking, and 5) laws and penalties (Velicer et al., 1994). Advantages include both adequate levels of internal and external validity, as well as a broad range of applications. The SPI can be used to assess attitudes towards smoking regulation prior to creating an intervention or policy, or to measure changes in attitude as an outcome of an intervention (Laforge et al., 1998). In addition, the SPI is quite adaptable, as groups have translated it for use in other countries. Researchers in Germany used a translated and modified version of the SPI in a study ascertaining the relationship between smoking status and attitudes towards regulations (Schumann et al., 2006). Their version of SPI contained 30 questions in six categories: advertising and promotion, taxes and fees, penalties, public education, sanctions, and environmental restrictions (Schumann et al., 2006). In addition to the 35-item SPI, there is a modified, 24-item short form (SPI-24) that has shown adequate reliability (Laforge et al., 2004).

Now, after the Synar Amendment, Master Settlement Agreement, and Family Smoking Prevention and Tobacco Control Act have been established, the SPI may be limited in that many of the items evaluate attitudes towards tobacco regulations that are already in place and are well-established. The primary goal of the current research project was to develop and validate timely questionnaire to measure attitudes towards tobacco regulation, with a particular focus on e-

cigarettes and flavorings/additives. The Yale Smoking Policy Survey (YSPS) builds upon the previously developed SPI, adding specific items to capture current issues in tobacco policy.

## **Methods**

### **Item Generation**

Beginning with the original 35 items and five components of the SPI, additional items were generated for each subscale. To reduce participant burden, items that focused on policies that are and have been commonplace were removed (e.g., smoking in restaurants, advertising at sporting events, the offering of promotional items or free samples).

Keeping to the original five subscales of the SPI, items were generated focusing on advertising and promotion, taxes and fees, public education, restrictions on smoking, and laws and penalties. These included items such as, “the federal government should provide funding to help promote stop-smoking techniques,” which was added under the public education theme. Items were then generated for an additional theme focusing on e-cigarette use and policies. A mix of items that mirrored those used for traditional cigarettes and tobacco products, as well as ones that highlighted unique attributes of e-cigarettes, were included, such as, “all e-cigarette advertising should be banned,” to correspond with the item, “all cigarette advertising should be banned.”

### **Expert Feedback and Pilot Study**

Expert feedback was received from leading researchers in tobacco regulatory science, as well as post-doctoral fellows in the Yale Tobacco Center of Regulatory Science. Feedback received helped to improve the clarity of items and ensure construct validity, particularly with those items pertaining to e-cigarettes. A pilot study was performed using a convenience sample (n=262) of participants recruited through posts on social media. Pilot data were used to examine the initial item properties. Items were then revised or dropped to yield the final item pool.

### **Participants**

Institutional approval was obtained from the Human Investigation Committee prior to YSPS administration. Participants were recruited through Amazon's Mechanical Turk (MTurk), which allows groups to pay users to perform human intelligence tasks (HITs). After accepting the task in MTurk, participants were automatically routed to the survey platform Qualtrics to complete the survey anonymously. Prior to the administration of any survey items, participants provided informed consent. After completing the informed consent page, participants were asked for demographic characteristics including gender, age, highest level of education completed, smoking status, and exposure to secondhand smoke. Upon completion of the survey participants were compensated with promotional credit to Amazon.com.

### **Measures**

The Yale Smoking Policy Survey, as administered to the study sample, contained 34 items. The first 25 items referred to traditional cigarettes and tobacco products: five items each focusing on the original SPI subscales. The remaining nine items referred to e-cigarettes. All items included response choices in the form of a five-point Likert scale, with higher scores indicating a greater degree of agreement with the item, and lower scores indicating a lesser degree of agreement.

To obtain test-retest data, the survey was administered to some participants a second time. Two weeks after the initial wave of data collection, participants were contacted through MTurk and asked to complete the survey again. Consent and compensation were identical for the second administration.

### **Statistical Analyses**

Exploratory and confirmatory factor analyses (EFA and CFA) were conducted to determine if the same factors established in the SPI were found in the YSPS. Additionally, factor

analysis provides greater insight into the relationship between items. For exploratory analyses, principal components analysis with a Varimax rotation was performed using SPSS Version 21.0 (IBM Corp., Armonk, NY). Confirmatory factor analysis was performed using SAS Version 9.4 (SAS Institute, Cary, NC).

Internal and test-retest reliability were determined by calculation of Chronbach's alpha and Pearson correlation coefficients, respectively, for the extracted components using SPSS. Analysis of variance (ANOVA) was used to determine if subscale mean scores differed significantly by response to certain demographic questions. Significant ANOVAs were followed up with Scheffe's post-hoc test.

## Results

### Participant Characteristics

After validity checks, a total of 343 participants completed the survey. Of these, 73 participants completed the survey approximately 2 weeks later, providing test-retest data. Demographic characteristics of the sample are reported in **Table 1**. The average age of all participants was 34.75 years (SD 12.1). The sample contained slightly more men (55.4%) than women and was well educated (89.7% having completed at least some college). The average age of participants who provided data for test-retest reliability analyses was 38.31 (SD 15.3). This sample contained more men (64.4%) than women, and most participants were well educated (87.7% having completed at least some college).

Smoking status was determined by two questions. The first asked, “Do you currently consider yourself a smoker?” The second asked, “Have you smoked at least 100 cigarettes in your lifetime?” Former smokers were those who did not report themselves as current smokers and reported more than 100 lifetime cigarettes. Non-smokers were those who reported negatively to both questions. The sample included an over-representation of current smokers (36.4%) as compared to current population estimates of 16.8% (Jamal et al., 2015). In terms of smoking history, 21.6% of the sample reported being former smokers, which is consistent with current population estimates of 21.9% (Jamal et al., 2015). Of the participants providing test-retest data, 43.8% were current smokers and 20.5% were former smokers.

Data were collected on additional factors of interest that could possibly impact attitudes towards regulation. In terms of secondhand smoke exposure, 28% of participants reported being exposed to secondhand smoke at home, and 68.2% reported that immediate family members or close friends are smokers.

## Factor Analyses

Samples for factor analyses were created by randomly selecting approximately half (n=171) of the cases for exploratory factor analysis and half (n=172) for confirmatory factor analysis. Both samples were similar with respect to relevant demographic characteristics (e.g., age, gender, smoking status). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.923, and Bartlett's test of sphericity was highly significant ( $p < 0.001$ ), indicating that the data were appropriate for factor analysis. Exploratory factor analysis revealed six components, each explaining a significant amount of variance in response and collectively explaining 75.2% of the total variance in response (**Table 2**). Items with loading scores of 0.45 or greater for any of the components were considered to have loaded onto that component. Removal of non-loading items yielded a final tool with 30 items. Confirmatory factor analysis (CFI) produced a root mean-square error of approximation (RMSEA) of 0.123, and a Comparative Fit Index (CFI) of 0.778. The CFA confirmed the six components determined in the EFA, which demonstrated the following themes: *Restrictions on Place and E-Cigarettes*, *Taxes and Licensing*, *Policies to Protect Minors*, *Public Education*, *Advertising and Promotion*, and *Government's Role in E-Cigarette Regulation*.

The *Restrictions on Place and E-Cigarettes* subscale focuses mainly on place-based limits of smoking (including e-cigarettes), such as college campuses, workplaces, and other public spaces. Additionally, it covers aspects of e-cigarette regulation such as licensing of retailers and advertising. The *Taxes and Licensing* subscale refers mainly to different purposes for taxation, as well as the licensing of cigarette vendors. The *Policies to Protect Minors* subscale, as the title suggests, consists entirely of items that refer to laws or penalties intended to prevent youth access and exposure to secondhand smoke. The *Public Education* subscale

includes items that discuss opportunities for increasing awareness of smoking risks and cessation resources. The *Advertising and Promotion* subscale consists entirely of items referring to the advertising and promotion of cigarettes and tobacco products, in both general and specific contexts. Finally, the *Government's Role in E-Cigarette Regulation* subscale contains items that deal with issues surrounding the role of government in registration of products, demonstration of safety, and research funding.

### **Scoring**

Item responses included “Strongly Disagree,” “Disagree,” “No Opinion,” “Agree,” and “Strongly Agree,” and responses were assigned a numeric score from 1-5, respectively. Thus, higher scores indicate a greater degree of agreement with the statement. Subscale mean scores were calculated by taking the average of an individual’s responses to items in the corresponding factor, so that a subscale mean score also ranges from 1-5.

### **Reliability Analyses**

Each subscale demonstrated good or excellent reliability, with Chronbach’s alpha values ranging from 0.813 to 0.934. Test-retest reliability was established by correlating subscale mean scores from the first administration with scores from the second administration among participants who completed the survey twice. Pearson’s correlation coefficients ranged between 0.80 and 0.92, indicating strong test-retest reliability (**Table 2**).

### **Tests of Criterion Validity**

Criterion validity was initially examined by comparing the subscale mean scores for current smokers, former smokers, and non-smokers (**Table 3**). Post-hoc tests revealed significant differences in average response for the *Restrictions on Place and E-Cigarettes* subscale for all pairwise comparisons, where current smokers had the lowest average scores and non-smokers

had the highest. For all other subscales, post-hoc tests showed that current smokers had significantly higher average scores than those not currently smoking, including both former and non-smokers. This indicates that YSPS scores vary as a function of smoking status and history, thus supporting concurrent validity. Additionally, subscale mean scores were compared between groups defined by exposure to secondhand smoke (**Table 4**). Those who reported being exposed to secondhand smoke at home had significantly lower subscale mean scores for the *Restrictions on Place and E-Cigarettes* and *Policies to Protect Minors* subscales, compared to those who were not exposed at home.

## Discussion

The primary goal of this research project was to develop and validate a questionnaire to measure attitudes towards tobacco regulation, with a particular focus on e-cigarettes and flavorings/additives. The YSPS was created to build upon and update the previously developed SPI, creating a relevant and timely tool to assess attitudes towards these policies. The YSPS was successful in achieving these aims, although the substantive differences between the YSPS and SPI are not as great as expected, which speaks to the strength of the original instrument.

The YSPS evaluates several aspects of smoking and tobacco regulation that the SPI did not: smoking in motor vehicles with children, smoking bans on college campuses, insurance coverage for quit-counseling and pharmaceutical resources, and the regulation of e-cigarettes. Such items allow the tool to capture attitudes on current issues in addition to perennial ones, such as taxes and restrictions on advertising. Given the substantial evolution of tobacco control policy over the last two decades and the emergent popularity of e-cigarettes, it is critical to adopt a new tool that can evaluate contemporary challenges.

The YSPS, as developed, demonstrates good reliability and validity. All six subscales demonstrate good or excellent internal and test-retest reliability. Construct validity is supported by expert review, and criterion validity is established by significant differences in response patterns between groups of different smoking status. After post-hoc tests, current smokers averaged significantly lower subscale mean scores than former and non-smokers, indicating a lesser degree of support for tobacco and smoking policies. This finding is to be expected considering that such policies, by their very nature, affect current smokers more than those not currently smoking. The smallest difference between smoking status groups was seen on the *Public Education* subscale, which evaluates generally agreeable aspects of education about the

risks of smoking and the availability of cessation resources. This scale also showed consistently high subscale mean scores across all smoking status groups. Such findings are likely explained by the hands-off nature of policies promoting education and the subsequently high degree of acceptance these policies enjoy in today's culture.

Strengths of the current study include the use of two waves of data collection. The first employed a large pilot sample to ensure readability and comprehensiveness of the item domain, and the second used a validation sample on which the primary analyses were conducted. The study also included a sub-sample of participants who completed the survey approximately two weeks later to provide an estimate of test-retest reliability. The use of concurrent measures of smoking status and history provided evidence of concurrent validity. The established reliability and validity make the tool valuable in measuring attitudes towards smoking and tobacco policies. The YSPS can provide meaningful information about a community's receptiveness to policy interventions, and can be used in both cross-sectional and longitudinal settings. Collection of information at multiple time points may allow tracking of a group or community's changing opinions over time, as new policies are implemented. Additionally, aside from the SPI, no group to our knowledge has undertaken complete analyses of the reliability and validity of a tool to assess attitudes towards smoking and tobacco policies.

This work is not without its limitations, however. The study sample included a high proportion of current smokers compared to current national estimates, although the percentage of former smokers was consistent. Although this contributed to a more adequate sample size to make subscale mean score comparisons between groups, the sample was not representative of the population with respect to smoking status. This could suggest that selection bias was introduced, likely due to the title of the survey on Amazon MTurk, which referred to smoking. Additionally,

the study sample was well educated, with the vast majority of participants having completed at least some college. Education is known to correlate with smoking status, and it can be expected that smoking status influences attitudes (Jamal et al., 2015). Thus an overrepresentation of highly educated individuals may indicate a need to validate the YSPS in a more representative sample. This overrepresentation could also have counteracted the bias presented by an overrepresentation of smokers, however, since more educated individuals are less likely to smoke (Jamal et al., 2015).

If the YSPS is validated in a larger, more representative sample, it could be used in future projects to assess whether views of these policies change after the implementation of a new policy, such as the United States Department of Housing and Urban Development's rule banning smoking in public housing. The YSPS could also be used, as was similarly suggested after the initial validation of the SPI, to compare attitudes between citizens of different locales, such as states or countries (Velicer et al., 1994), or between individuals with different sociodemographic characteristics, such as race/ethnicity. Additionally, future research could use the YSPS to shed light on potential policy-related reasons for limited uptake of government-sponsored cessation resources. The YSPS thus fills a need for a reliable, valid, and timely tool to measure attitudes towards smoking and tobacco policies, and provides researchers an opportunity for insight into the beliefs of the public pertaining to such an important public health issue.

## Tables

**Table 1. Demographic Characteristics of Study Sample for Time 1 (N=343) and Time 2 (N=73)**

Characteristic	Time 1, n (%)	Time 2, n (%)
Age (years), mean $\pm$ SD	34.75 $\pm$ 12.1	38.31 $\pm$ 15.3
Smoking status		
Current smoker	125 (36.4)	32 (43.8)
Former smoker	74 (21.6)	15 (20.5)
Non-smoker	144 (42.0)	26 (35.6)
Sex		
Male	190 (55.4)	47 (64.4)
Female	153 (44.6)	26 (35.6)
Education		
Some high school	1 (0.3)	0 (0.0)
High school graduate	34 (9.9)	9 (12.3)
Some college	125 (36.4)	24 (32.9)
College graduate	138 (40.2)	32 (43.8)
Some post-graduate training	45 (13.1)	8 (11.0)
Exposed to secondhand smoke at home		
Yes	96 (28.0)	19 (26.0)
No	247 (72.0)	54 (74.0)
Immediate family members or close friends who are smokers		
Yes	234 (68.2)	47 (64.4)
No	139 (31.8)	26 (35.6)

**Table 2. YSPS Items, Exploratory and Confirmatory Factor Loadings, Test-Retest Reliability Correlations (Pearson's  $\rho$ )**

Item	Factor 1		Factor 2		Factor 3		Factor 4		Factor 5		Factor 6	
	EFA	CFA										
<b>Restrictions on Place and E-Cigarettes: (17.2% of total variance; <math>\alpha=0.925</math>; <math>\rho=0.915^*</math>)</b>												
E-cigarette smoking in public places should be banned.	0.842	0.893										
All work sites should be e-cigarette free.	0.835	0.896										
The sale of e-cigarette liquids with flavors should be banned.	0.793	0.754										
All e-cigarette advertising should be banned.	0.784	0.770										
Store-owners should need a license to sell e-cigarettes (just like alcoholic beverages).	0.668	0.709										
Smoking should be banned on all college campuses.	0.541	0.758										
All work sites should be smoke free.	0.524	0.750										
Smoking in public places should be illegal.	0.497	0.700										
<b>Taxes and Licensing: (15.9% of total variance; <math>\alpha=0.934</math>; <math>\rho=0.903^*</math>)</b>												
Taxes on cigarettes should be increased to discourage smoking.			0.808	0.953								
Taxes on cigarettes should be increased to prevent youth from starting to smoke.			0.801	0.934								
Taxes on cigarettes should be increased to pay for smoking-related health care costs.			0.794	0.872								
Taxes on cigarettes should be set by the federal government to ensure a consistent deterring factor.			0.710	0.839								
The government should place a large tax on cigarette advertising.			0.672	0.848								
Storeowners should need a license to sell cigarettes (just like alcoholic beverages).			0.520	0.646								
<b>Policies to Protect Minors: (13.1% of total variance; <math>\alpha=0.843</math>; <math>\rho=0.888^*</math>)</b>												
Laws should impose financial penalties for the sale of tobacco products to minors.					0.809	0.890						
Penalties should be gradually increased for storeowners who repeatedly sell tobacco to minors.					0.792	0.905						
People who sell tobacco to minors should be prosecuted.					0.750	0.794						
Smoking in a motor vehicle with minors should be banned.					0.566	0.703						
<b>Public Education: (11.9% of total variance; <math>\alpha=0.827</math>; <math>\rho=0.796^*</math>)</b>												
Parents should be educated about the dangers of second-hand smoke to children.							0.837	0.902				
The dangers of second-hand smoke should be publicized.							0.809	0.874				
Physicians should educate their patients about the health risks of smoking.							0.692	0.746				
Insurance plans should provide quit-counseling and pharmaceutical resources free of charge.							0.671	0.579				
The federal government should provide funding to help promote stop-smoking techniques.							0.636	0.585				
<b>Advertising and Promotion: (10.0% of total variance; <math>\alpha=0.903</math>; <math>\rho=0.911^*</math>)</b>												
All cigarette advertising should be banned.									0.729	0.849		
Tobacco sponsorships at entertainment and sporting events should be banned.									0.705	0.779		
Tobacco products should not be advertised at the front of the store.									0.677	0.777		
Free samples of tobacco products should be banned.									0.510	0.652		
<b>Government's Role in E-Cigarette Regulation: (7.1% of total variance; <math>\alpha=0.813</math>; <math>\rho=0.822^*</math>)</b>												
The government should fund research into the risks and potential benefits of e-cigarette smoking.											0.752	0.579
E-cigarette manufacturers should be required to register their products with the FDA.											0.656	0.864
The safety of chemicals added to e-cigarette liquid should be proven to the FDA prior to sale.											0.654	0.721

\* denotes significance at the 0.01 level (2-tailed).

**Table 3. Subscale Mean Score Differences as a function of Smoking Status**

	Smoking Status				F-Statistic	p-value <sup>†</sup>	Post-Hoc Tests <sup>‡</sup>
	Current Smoker (n=125)	Former Smoker (n=74)	Non-Smoker (n=144)	Total Sample (n=343)			
Restrictions on Place and E-Cigarettes	2.57 ± 0.97	3.03 ± 1.09	3.62 ± 0.97	3.11 ± 1.10	37.86	<0.001*	a, b, c
Taxes and Licensing	2.95 ± 1.12	3.77 ± 1.08	4.04 ± 0.95	3.58 ± 1.15	37.78	<0.001*	a, b
Policies to Protect Minors	3.84 ± 1.02	4.20 ± 0.71	4.41 ± 0.60	4.16 ± 0.84	16.81	<0.001*	a, b
Public Education	4.04 ± 0.80	4.44 ± 0.63	4.42 ± 0.58	4.28 ± 0.70	12.88	<0.001*	a, b
Advertising and Promotion	3.00 ± 1.16	3.53 ± 1.15	3.88 ± 1.00	3.49 ± 1.16	21.80	<0.001*	a, b
Government's Role in E-Cigarette Regulation	3.86 ± 0.99	4.27 ± 0.71	4.25 ± 0.76	4.11 ± 0.86	8.79	<0.001*	a, b

<sup>†</sup> p-values obtained through ANOVA

<sup>‡</sup> Post-hoc comparisons were done using Scheffe's method, and are interpreted as follows: a = current smokers significantly different from former smokers, b = current smokers significantly different from non-smokers, c = former smokers significantly different from non-smokers

**Table 4. Subscale Mean Score Differences as a Function of Secondhand Smoke Exposure**

	Are you exposed to secondhand smoke at home?				Do you have immediate family members or close friends who are currently smokers?			
	Yes (n=96)	No (n=247)	F-Statistic	p-value <sup>†</sup>	Yes (n=234)	No (n=109)	F-Statistic	p-value <sup>†</sup>
Restrictions on Place and E-Cigarettes	2.89 ± 1.19	3.20 ± 1.05	5.25	0.023*	3.06 ± 1.14	3.22 ± 1.02	1.50	0.222
Taxes and Licensing	3.42 ± 3.42	3.65 ± 1.08	2.61	0.107	3.55 ± 1.17	3.66 ± 1.10	0.74	0.391
Policies to Protect Minors	3.96 ± 3.96	4.23 ± 0.73	7.34	0.007*	4.14 ± 0.88	4.19 ± 0.74	0.27	0.603
Public Education	4.29 ± 4.29	4.28 ± 0.72	0.00	0.961	4.27 ± 0.70	4.32 ± 0.70	0.31	0.576
Advertising and Promotion	3.30 ± 1.28	3.56 ± 1.10	3.32	0.070	3.44 ± 1.20	3.59 ± 1.07	1.31	0.253
Government's Role in E-Cigarette Regulation	4.02 ± 1.01	4.14 ± 0.80	1.36	0.244	4.06 ± 0.92	4.21 ± 0.72	2.43	0.120

<sup>†</sup> p-values obtained through ANOVA

## Acknowledgments

Research reported in this publication was supported by grant number P50DA036151 from the National Institute on Drug Abuse and Food and Drug Administration Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

I would like to thank Marney White and Xiaomei Ma for providing critical feedback and thoughtful guidance on this project, answering many questions, and sharing invaluable lessons in developing a research project from beginning to end. Additionally, I must express profound gratitude to my family and friends for their support and encouragement throughout this journey. Thank you!

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