

Appendix Figure 1 displays a schematic illustrating how tobacco use behaviors and openness to use non-cigarette tobacco products were assessed and categorized. All definitions for tobacco product use behaviors were based on those used in recent population surveys.<sup>3,34,35</sup> Current users of each non-cigarette product were described in the sample, but were excluded from analyses of openness to use that product. Among non-current users, a binary variable indicating lifetime use of any other non-cigarette product examined was used as a covariate in analyses.

### **Cigarette Smoking**

Cigarette smoking status included four mutually exclusive categories<sup>3,33</sup>: (1) *Never smokers* had never tried smoking, not even one or two puffs; (2) *Non-current, ever smokers* tried smoking at least once in their lifetime, but currently did not smoke at all; (3) *Current smokers* smoked cigarettes every day or some days; and (4) *Former smokers* smoked at least 100 lifetime cigarettes, but currently did not smoke at all.

### **Cigar Products**

For cigar products, triers were defined as respondents who had used cigar products  $\geq 50$  times in their life but did not report current use.<sup>34,35</sup> Current users reported now using cigar products *rarely, some days, or every day*.<sup>3</sup> Openness to using cigar products was operationalized using items assessing cigar product use and the likelihood of using cigar products in the next year. Based on these items, openness to using cigar products consisted of five categories: *definitely will not use; probably will not use; probably will use; definitely will use; and triers who were non-current users*. A binary dependent variable was created to indicate openness to using cigar products. Respondents who were not open to using cigar products indicated they definitely will not use cigar products (i.e., a firm response indicating they were not open to using cigar

products). Respondents who were open to using cigar products were those who had tried cigar products previously or indicated any other response on the openness item (i.e., probably will not use, probably will use, definitely will use).

### **Electronic Cigarettes**

For electronic cigarettes (e-cigarettes), triers were respondents who had tried e-cigarettes at least once in their lifetime, but did not report current use. Current users reported now using e-cigarettes *rarely, some days, or every day*.<sup>3</sup> Openness to using e-cigarettes was operationalized using items assessing e-cigarette awareness, ever use, and the likelihood of using e-cigarettes in the next year. Based on these items, openness to using e-cigarettes consisted of five categories: *not aware of e-cigarettes or definitely will not use; probably will not use; probably will use; definitely will use; and triers who were non-current users*. A binary dependent variable was created to indicate openness to using e-cigarettes. Respondents who were not open to using e-cigarettes either were not aware of e-cigarettes or indicated they definitely will not use e-cigarettes (i.e., a firm response indicating they were not open to using the product). Respondents who were open to using e-cigarettes were those who had tried e-cigarettes previously or indicated any other response on the openness item (i.e., probably will not use, probably will use, definitely will use).

### **Hookah**

For hookah, triers were respondents who had tried the product at least once in their lifetime, but did not report current use. Current users reported now using hookah *rarely, some days, or every day*.<sup>3</sup> Openness to using hookah was operationalized using items assessing product use and the likelihood of using hookah in the next year. Based on these items, openness to using hookah

**Appendix**  
**Openness to Using Non-cigarette Tobacco Products Among U.S. Young Adults**  
**Mays et al.**

consisted of five categories: *definitely will not use*; *probably will not use*; *probably will use*; *definitely will use*; and *triers who were non-current users*. A binary dependent variable was created to indicate openness to using hookah. Respondents who were not open to using hookah indicated they definitely will not use hookah (i.e., a firm response indicating they were not open to using hookah). Respondents who were open to using hookah were those who had tried hookah previously or indicated any other response on the openness item (i.e., probably will not use, probably will use, definitely will use).

### **Pipe Tobacco**

For pipe tobacco, triers were defined as respondents who had used the product  $\geq 50$  times in their life, but did not report current use.<sup>3,34,35</sup> Current users were defined as those who had tried pipe tobacco and reported now using pipe tobacco *rarely*, *some days*, or *every day*.<sup>3</sup> Openness to using pipe tobacco was operationalized using items assessing product use and the likelihood of using pipe tobacco in the next year. Based on these items, openness to using pipe tobacco consisted of five categories: *definitely will not use*; *probably will not use*; *probably will use*; *definitely will use*; and *triers who were non-current users*. A binary dependent variable was created to indicate openness to using pipe tobacco. Respondents who were not open to using pipe tobacco indicated they definitely will not use pipe tobacco (i.e., a firm response indicating they were not open to using pipe tobacco). Respondents who were open to using pipe tobacco were those who had tried pipe tobacco previously or indicated any other response on the openness item (i.e., probably will not use, probably will use, definitely will use).

### **Chew, Snuff, Dip**

Triers of chew, snuff, or dip were those who reported using the product  $\geq 20$  times in their life, but did not report current use.<sup>34,35</sup> Current users were defined as those who had tried chew, snuff, or dip and currently used the product *rarely, some days, or every day*.<sup>3</sup> Openness to using chew, snuff, or dip was operationalized using items assessing product use and the likelihood of using chew, snuff, or dip in the next year. Based on these items, openness to using chew, snuff, or dip consisted of five categories: *definitely will not use; probably will not use; probably will use; definitely will use; and triers who were non-current users*. A binary dependent variable was created to indicate openness to using chew, snuff, or dip. Respondents who were not open to using chew, snuff, or dip indicated they definitely will not use these products (i.e., a firm response indicating they were not open to using chew, snuff, or dip). Respondents who were open to using chew, snuff, or dip were those who had tried chew, snuff, or dip previously or indicated any other response on the openness item (i.e., probably will not use, probably will use, definitely will use).

### **Snus and Dissolvables**

For snus and dissolvables, the measures and variables used to define openness to using the products followed the same pattern. Triers were defined as respondents who had ever used the product. Current users were defined as those who had tried the product and currently used the product *rarely, some days, or every day*.<sup>3</sup> Openness to using the product was operationalized using items assessing product awareness, ever use, and the likelihood of using the product in the next year. Based on these items, openness to using the product consisted of five categories: *not aware of the product or definitely will not use; probably will not use; probably will use; definitely will use; and triers who were non-current users*. Binary dependent variables were created to indicate openness to using each product. Respondents who were not open to using the

product either were not aware of the product or indicated they definitely will not use the product (i.e., a firm response indicating they were not open to using the product). Respondents who were open to using the product were those who had tried the product previously or indicated any other response on the openness item (i.e., probably will not use, probably will use, definitely will use).

### **Sensitivity Analyses**

Based on another recent study where researchers used openness to using tobacco products was to investigate tobacco use risk behaviors among young adults, we conducted sensitivity analyses in order to determine whether the definitions used to operationalize openness to using non-cigarette tobacco products affected our findings.<sup>36</sup> First, we replicated our analyses classifying those who responded *definitely will not use* and *probably will not use* as not being open to using the products (versus *definitely will not use* only, as reported in the Results). Second, we also replicated our analyses excluding those who were not aware of e-cigarettes and snus, the two products for which awareness was assessed and used in the definition of openness. The primary statistical findings reported in the Results did not change in these sensitivity analyses, supporting the face validity of the openness construct. One set of findings is reported in the Results for brevity.

**Appendix**  
**Openness to Using Non-cigarette Tobacco Products Among U.S. Young Adults**  
**Mays et al.**

**Appendix Table 1. Bivariate Associations With Openness to Use Non-Cigarette Tobacco Products, National Adult Tobacco Survey 2012-2013**

Open to using ...	Cigar products			Electronic cigarettes			Hookah			Pipe tobacco			Chew, snuff, dip			Snus		
	Open N=1,132	Not open N=3,878	p- value	Open N=1,499	Not open N=4,053	p- value	Open N=1,733	Not open N=3,378	p- value	Open N=730	Not open N=5,037	p- value	Open N=499	Not open N=5,103	p- value	Open N=716	Not open N=5,129	p- value
<b>Demographics</b>																		
Gender			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>
Male	69.2	59.9		62.0	45.9		56.5	46.4		76.6	46.7		83.7	45.5		82.6	46.6	
Female	30.8	40.1		38.0	54.1		43.5	53.6		23.4	53.3		16.3	54.5		17.3	53.4	
Race/Ethnicity			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>0.037</b>			<b>0.003</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>
Non-Hispanic white	60.9	52.9		61.3	52.7		58.4	53.0		57.1	55.3		63.2	54.0		73.8	53.2	
Non-Hispanic black	7.2	12.1		7.6	12.8		10.2	12.4		6.2	11.8		5.0	11.9		2.1	12.1	
Hispanic	20.5	21.7		17.8	21.8		19.2	21.5		23.6	20.3		18.1	21.3		12.9	21.8	
Other group or unknown	11.4	13.3		13.5	12.6		12.2	13.0		13.0	12.7		13.6	12.7		11.2	12.9	
Age			0.932			0.589			0.777			<b>&lt;0.001</b>			0.593			0.220
18-24 years	59.5	59.6		60.8	59.8		58.2	57.7		69.1	58.8		58.8	60.3		62.9	60.0	
25-29 years	40.5	40.4		39.2	40.2		41.8	42.3		30.9	41.2		41.2	39.7		37.1	40.0	
Education			0.215			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>0.011</b>			<b>0.015</b>			<b>0.001</b>
<High school	11.5	12.6		13.7	12.1		8.0	15.9		16.3	12.0		15.3	12.0		13.0	12.5	
High school diploma or equivalent	36.3	33.5		35.2	32.4		32.9	35.2		34.7	34.0		38.4	32.2		39.2	33.2	
Some college	35.2	33.9		36.7	33.7		35.4	32.1		34.5	34.3		32.1	34.9		35.3	34.3	
College degree+	17.0	19.9		14.4	21.8		23.7	16.7		14.5	19.6		14.1	19.8		12.5	20.0	
Marital status			0.331			<b>0.036</b>			0.466			<b>&lt;0.001</b>			0.134			<b>0.023</b>
Married/Partner	32.3	30.5		32.5	29.0		31.5	32.7		24.0	31.5		33.7	29.8		30.1	30.4	
Unmarried	67.7	69.5		67.5	71.0		68.5	67.3		75.9	68.4		66.3	70.2		69.9	69.6	
Household income			0.106			0.639			<b>&lt;0.001</b>			0.051			0.664			<b>0.046</b>
<\$30,000	18.5	19.4		19.4	19.3		17.8	20.8		16.4	19.6		17.4	19.6		21.5	19.3	
\$30,000-\$49,999	22.5	23.2		23.6	22.4		22.6	23.7		21.6	23.3		20.8	23.2		19.0	23.2	
\$50,000-\$69,999	15.3	14.2		14.7	14.0		14.9	14.0		15.4	14.0		15.2	14.0		13.4	14.2	
\$70,000-\$99,999	12.8	12.1		13.4	12.4		14.4	11.4		14.1	12.3		14.7	12.3		15.2	12.2	
≥\$100,000	14.1	11.0		11.1	12.8		15.7	9.5		16.1	11.9		12.9	12.1		14.8	12.1	
Refused, don't know, missing	16.7	20.0		17.9	19.1		14.5	20.6		16.4	18.8		18.9	18.9		16.1	19.0	
<b>Cigarette smoking status</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>
Never smoker	16.1	53.6		10.5	55.2		21.4	55.1		21.1	43.9		14.6	44.4		6.6	45.0	
Non-current ever smoker	26.9	29.1		24.2	32.2		38.0	22.9		22.9	29.4		19.9	29.5		17.7	30.2	
Current smoker	38.9	10.8		50.4	5.7		27.1	15.2		45.9	18.0		46.6	18.6		57.7	17.0	
Former smoker	18.0	6.5		14.8	6.8		13.5	6.8		10.0	8.7		18.9	7.5		18.0	7.7	
<b>Use of any other non-cigarette product</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>
Yes	72.8	32.1		70.8	32.8		51.8	23.7		79.5	45.4		91.9	44.7		77.7	45.2	
No	27.2	67.8		29.2	67.1		48.2	76.3		20.5	54.6		8.1	55.3		22.3	54.8	
<b>Industry promotions</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>			<b>&lt;0.001</b>
Received any promotion	35.0	15.6		41.6	12.6		27.1	17.0		36.1	20.7		39.4	20.0		49.7	19.3	
No promotions	65.0	84.4		58.4	87.4		72.9	83.0		63.9	79.3		60.6	80.0		50.3	80.7	

**Appendix**  
**Openness to Using Non-cigarette Tobacco Products Among U.S. Young Adults**  
**Mays et al.**

**Perceived harms**  
(Mean, SE)

Cigarettes are addictive (range 1-3)	2.6 (0.02)	2.7 (0.01)	<b>&lt;0.001</b>	2.5 (0.02)	2.7 (0.01)	<b>&lt;0.001</b>	2.7 (0.02)	2.7 (0.01)	0.645	2.5 (0.03)	2.7 (0.01)	<b>&lt;0.001</b>	2.6 (0.03)	2.6 (0.01)	.114	2.6 (0.03)	2.6 (0.01)	0.322
Cigarettes are harmful (range 1-3)	2.8 (0.01)	2.9 (0.01)	<b>&lt;0.001</b>	2.8 (0.01)	2.9 (0.01)	<b>&lt;0.001</b>	2.8 (0.01)	2.9 (0.01)	<b>0.022</b>	2.8 (0.02)	2.9 (0.01)	<b>&lt;0.001</b>	2.8 (0.02)	2.9 (0.005)	<b>&lt;0.001</b>	2.8 (0.02)	2.9 (0.01)	<b>&lt;0.001</b>

*Note:* Boldface indicates statistical significance ( $p < 0.05$ ). Weighted column percent is displayed unless otherwise indicated. Current users of each product are excluded from the product-specific analyses. Some percentages do not sum to 100% due to rounding.

**Appendix**  
**Openness to Using Non-cigarette Tobacco Products Among U.S. Young Adults**  
**Mays et al.**

**Appendix Figure 1.** Measures of tobacco use behavior and openness to use non-cigarette tobacco products.

