

### Online Supplemental Material

#### Supplementary Psychometric Results of Appeal and Sensory Effect Ratings

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### **Supplementary Psychometric Results of Appeal and Sensory Effect Ratings**

An exploratory factor analysis was conducted using the 7 items as separate indicators (i.e., “Liking,” “Willingness to use again,” and “Disliking,” “Sweetness,” “Bitterness,” “Harshness,” and “Smoothness”). The solution yielded only one prominent factor (eigenvalue = 3.91, 55.78% of variance) with large standardized factor loadings for “liking” (0.95), “willingness to use again” (.89), and “disliking” (-.78), indicative of the appeal construct. “Sweetness,” “Bitterness,” “Harshness,” and “Smoothness” each had substantially lower loadings on this factor (range: -.08 to .43). Consequently, the three appeal items were combined in a composite score and the remaining for sensory effect ratings were analyzed separately as four unique outcomes.

**Table S1. Bivariate Correlations Among Appeal and Sensory Effect Ratings Pooled Across All Conditions**

	<b>Appeal</b>	<b>Sweetness</b>	<b>Smoothness</b>	<b>Bitterness</b>
Appeal	-	-	-	-
Sweetness	.43*	-	-	-
Smoothness	.55*	.31*	-	-
Bitterness	-.48*	-.33*	-.43*	-
Harshness	-.33*	-.17*	-.64*	.48*

*Note.* Values reflect Pearson Correlation Coefficients. \* $p < .05$  (two-tailed).

**Table S2. Standardized Estimates, 95% Confidence Intervals, and P-Values of Total, Direct, and Indirect Effects and Component Paths from Multiple Mediator Model in Figure 2**

	Flavor and Nicotine Content → Appeal and Sensory Effects						Sensory Effects → Appeal	
	Fruit vs. Tobacco		Menthol vs. Tobacco		Nicotine-Containing vs. Nicotine-Free			
	β (95%CI)	P	β (95%CI)	P	β (95%CI)	P	β (95%CI)	P
<b>Flavor and Nicotine → Appeal</b>								
Total effects <sup>a</sup>	.22 (.17, .28)	<.001*	.12 (.05, .20)	.001*	-.20 (-.24, -.16)	<.001*	NA	NA
Indirect effects <sup>b</sup>								
Sweetness (mediator)	.092 (.062, .122)	<.001*	.003 (-.012, .017)	.71	-.036 (-.049, -.023)	<.001*	NA	NA
Smoothness (mediator)	.045 (.026, .063)	<.001*	.039 (.017, .061)	.001*	-.156 (-.190, -.123)	<.001*	NA	NA
Bitterness (mediator)	.072 (.050, .094)	<.001*	.034 (.018, .051)	<.001*	-.067 (-.082, -.050)	<.001*	NA	NA
Harshness (mediator)	.002 (-.003, .008)	.40	-.001 (-.004, .002)	.65	.022 (-.032, .076)	.43	NA	NA
Direct effects <sup>c</sup>	.02 (-.02, .07)	.37	.05 (-.01, .10)	.11	.03 (-.02, .07)	.07	NA	NA
<b>Component paths</b>								
Sweetness	.40 (.35, .45) <sup>d</sup>	<.001	.01 (-.05, .08) <sup>d</sup>	.71	-.16 (-.19, -.13) <sup>d</sup>	<.001*	.23 (.16, .30) <sup>e</sup>	<.001*
Smooth	.10 (.07, .14) <sup>d</sup>	<.001*	.09 (.04, .14) <sup>d</sup>	<.001*	-.36 (-.42, -.31) <sup>d</sup>	<.001*	.43 (.36, .51) <sup>e</sup>	<.001*
Bitter	-.27 (-.32, -.22) <sup>d</sup>	<.001*	-.13 (-.19, -.07) <sup>d</sup>	<.001*	.25 (.21, .29) <sup>d</sup>	<.001*	-.27 (-.33, -.21) <sup>e</sup>	<.001*
Harsh	-.05 (-.08, -.01) <sup>d</sup>	.01*	.01 (-.03, .06) <sup>d</sup>	.56	.43 (.38, .49) <sup>d</sup>	<.001*	.05 (-.07, .17) <sup>e</sup>	.42

<sup>a</sup>Univariable effect of respective product characteristic on appeal.

<sup>b</sup>Indirect effect estimates from multiple mediator model depicted in Figure 1 indicating mediation by the respective sensory effect after adjusting for the mediating effects of the three other sensory effects.

<sup>c</sup>Effect of respective product characteristic on appeal adjusted for effects of four mediator variables.

<sup>d</sup>Univariable effect of respective product characteristic on respective sensory effect outcome.

<sup>e</sup>Association of respective sensory effect with appeal adjusted for three other sensory effect variables.

\*Statistically significant after Benjamini-Hochberg correction for multiple tests to control study-wise false discovery rate at .05.

NA=Not Applicable

CI=Confidence Interval

**Table S3. Correlational Paths Among Sensory Effect Ratings in the Multiple Mediator Model**

<b>Correlational Paths</b>	<b>Estimate (95% CI)</b>	<b>P</b>
Sweetness ↔ Smoothness	.24 (.18, .30)	<.001
Sweetness ↔ Bitterness	-.22 (-.29, -.15)	<.001
Sweetness ↔ Harshness	-.08 (-.13, -.02)	.004
Smoothness ↔ Bitterness	-.33 (-.39, -.26)	<.001
Smoothness ↔ Harshness	-.49 (-.55, -.42)	<.001
Bitterness ↔ Harshness	.36 (.30, .42)	<.001

**Table S4. Standardized Indirect Effect Estimates From Multiple Mediator Model Stratified by Smoking Status**

	Fruit vs. Tobacco	Menthol vs. Tobacco	Nicotine vs. Nicotine-Free
	$\beta$ (95%CI)	$\beta$ (95%CI)	$\beta$ (95%CI)
Never Smokers (N=22)			
Sweetness (mediator)	0.099 (0.028, 0.170)	0.019 (-0.021, 0.059)	-0.038 (-0.064, -0.012)
Smoothness (mediator)	0.044 (0.014, 0.075)	0.068 (0.030, 0.105)	-0.197 (-0.274, -0.120)
Bitterness (mediator)	0.067 (0.021, 0.113)	0.035 (0.004, 0.067)	-0.064 (-0.093, -0.034)
Harshness (mediator)	0.001 (-0.003, 0.005)	0.002 (-0.002, 0.006)	-0.032 (-0.068, 0.004)
Former Smokers (N=25)			
Sweetness (mediator)	0.095 (0.035, 0.155)	0.001 (-0.030, 0.029)	-0.032 (-0.050, -0.015)
Smoothness (mediator)	0.027 (0.001, 0.052)	0.020 (-0.015, 0.055)	-0.096 (-0.141, -0.051)
Bitterness (mediator)	0.094 (0.049, 0.139)	0.021 (-0.022, 0.063)	-0.081 (-0.118, -0.044)
Harshness (mediator)	0.003 (-0.002, 0.007)	-0.001 (-0.003, 0.002)	-0.008 (-0.026, 0.010)
Current Smokers (N=53)			
Sweetness (mediator)	0.091 (0.053, 0.128)	-0.002 (-0.020, 0.016)	-0.038 (-0.057, -0.020)
Smoothness (mediator)	0.053 (0.023, 0.083)	0.035 (0.004, 0.067)	-0.169 (-0.212, -0.126)
Bitterness (mediator)	0.059 (0.032, 0.087)	0.025 (0.007, 0.044)	-0.056 (-0.077, -0.035)
Harshness (mediator)	0.001 (-0.001, 0.004)	-0.002 (-0.006, 0.003)	-0.025 (-0.045, -0.006)

Indirect effect estimates from multiple mediator model depicted in Figure 2 indicating mediation by the respective sensory perception measure after adjusting for the mediating effects of the three other sensory perception measures, by smoking status.