

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

	Appeal	Sweetness	Smoothness	Bitterness
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
Flavor and Nicotine → Appeal								
Total effects ^a	.22 (.17, .28)	<.001*	.12 (.05, .20)	.001*	-.20 (-.24, -.16)	<.001*	NA	NA
Indirect effects ^b								
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 ^c	.02 (-.02, .07)	.37	.05 (-.01, .10)	.11	.03 (-.02, .07)	.07	NA	NA
Component paths								
Sweetness	.40 (.35, .45) ^d	<.001	.01 (-.05, .08) ^d	.71	-.16 (-.19, -.13) ^d	<.001*	.23 (.16, .30) ^e	<.001*
Smooth	.10 (.07, .14) ^d	<.001*	.09 (.04, .14) ^d	<.001*	-.36 (-.42, -.31) ^d	<.001*	.43 (.36, .51) ^e	<.001*
Bitter	-.27 (-.32, -.22) ^d	<.001*	-.13 (-.19, -.07) ^d	<.001*	.25 (.21, .29) ^d	<.001*	-.27 (-.33, -.21) ^e	<.001*
Harsh	-.05 (-.08, -.01) ^d	.01*	.01 (-.03, .06) ^d	.56	.43 (.38, .49) ^d	<.001*	.05 (-.07, .17) ^e	.42

^aUnivariable effect of respective product characteristic on appeal.

^bIndirect 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.

^cEffect of respective product characteristic on appeal adjusted for effects of four mediator variables.

^dUnivariable effect of respective product characteristic on respective sensory effect outcome.

^eAssociation 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

Correlational Paths	Estimate (95% CI)	P
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
	β (95%CI)	β (95%CI)	β (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.