Table S-1. *Results of multivariate logistic regressions for cross-influence of each isolation type and smoking status.*

Variables	Model 1				Model 2				Model 3			
	Cigarette		Avoided		Cigarette		Withdrawn		Cigarette		External	
Level 1: Within Person												
Baseline effects												
Cigarette Use $_{t-1}$ (ρ)	1.531	***	-0.260		1.744	***	0.243	+	1.154	***	-0.143	**
	(0.100)		(0.168)		(0.097)		(0.142)		(0.074)		(0.050)	
Avoided $_{t-1}$ (ρ)	-0.242	+	1.319	***								
	(0.129)		(0.082)									
Withdrawn $_{t-1}$ (ρ)					0.080		0.707	***				
					(0.113)		(0.099)					
External $_{t-1}$ (ρ)									0.080		-0.440	***
									(0.053)		(0.041)	
Grade	0.772	***	0.046		0.678	***	-0.025		0.560	***	-0.079	***
	(0.037)		(0.033)		(0.035)		(0.033)		(0.023)		(0.013)	
High School Effects (ref=Middle School)												
HSxCigarette $_{t-1}$ (ρ)	-0.076		0.486	**	-0.131		0.068					
	(0.112)		(0.178)		(0.108)		(0.152)					
HSxAvoided $_{t-1}$ (ρ)	-0.006		-0.453	***								
	(0.145)		(0.093)									
HSxWithdrawn $_{t-1}$ (ρ)					-0.122		-0.156					
					(0.127)		(0.112)					
High School	0.192	**	0.181	**	0.257	***	0.241	***				
	(0.062)		(0.064)		(0.060)		(0.065)					
HSxGrade	-0.307	***	0.302	***	-0.244	***	0.494	***				
	(0.040)		(0.038)		(0.038)		(0.038)					
Level 2: Between Person Effects												
	$\alpha_{cigarettes}$		$\alpha_{avoided}$		$\alpha_{cigarettes}$		$\alpha_{withdrawn}$		$\alpha_{cigarettes}$		$\alpha_{external}$	
Intercept	2.153	***	2.531	***	0.801	***	2.318	***	2.211	***	-0.149	***
	(0.157)		(0.094)		(0.104)		(0.118)		(0.140)		(0.090)	
Initial Obs Cigarette $_{t=0}$	2.405	***			1.970	***			3.167	***		
	(0.092)				(0.083)				(0.112)			
Initial Obs Avoided $_{t=0}$			1.157	***								
			(0.060)									

Variables	Model 1 Cigarette		Avoided		Model 2 Cigarette		Withdrawn		Model 3 Cigarette		External	
Initial Obs Withdrawn $_{t=0}$							1.028	***				
							(0.064)					
Initial Obs External $_{t=0}$											1.281	***
											(0.045)	
Initial Obs High School $_{t=0}$	0.335		0.261		0.741	**	-0.437	*				
	(0.234)		(0.203)		(0.226)		(0.205)					
Proportion Obs In HS	0.621	+	-0.154		-1.453	***	0.255					
	(0.363)		(0.309)		(0.333)		(0.338)					
Grade	0.342	***	0.262	***	0.321	***	0.414	***	0.435	***	-0.069	+
	(0.038)		(0.033)		(0.036)		(0.033)		(0.065)		(0.042)	
Mean Grade	-0.702	***	-0.256	**	-0.004		-0.426	***	-1.185	***	0.100	*
	(0.090)		(0.083)		(0.085)		(0.088)		(0.075)		(0.042)	
Initial HSxGrade $_{t=0}$	0.050		-0.067		-0.126		-0.055					
	(0.141)		(0.121)		(0.135)		(0.119)					
Proportion HSxGrade = 1	-0.591	***	-0.165		-0.976	***	-0.080					
	(0.148)		(0.140)		(0.140)		(0.142)					
Male	-0.050		0.578	***	-0.137	**	0.997	***	0.110	*	0.212	***
	(0.044)		(0.038)		(0.042)		(0.039)		(0.055)		(0.036)	
White	0.319	***	-0.360	***	0.163	**	-0.577	***	0.348	***	0.080	
	(0.062)		(0.049)		(0.056)		(0.051)		(0.078)		(0.046)	
Cohort	-0.226	***	-0.080	*	-0.250	***	-0.102	**	-0.103	+	-0.146	***
	(0.044)		(0.038)		(0.042)		(0.039)		(0.056)		(0.035)	
Treatment Group	-0.006		0.005		-0.028		-0.134	**	-0.014		-0.208	***
	(0.044)		(0.038)		(0.042)		(0.039)		(0.055)		(0.035)	
Variance of Between-Person Effects												
Variance	3.056	***	1.502	***	2.585	***	1.911	***	3.796	***	1.454	***
	(0.104)		(0.052)		(0.077)		(0.065)		(0.216)		(0.077)	
Covariance (with Cigarette)			0.338	***			0.409	***			0.221	***
			(0.052)				(0.049)				(0.060)	
Observations			63410				63410				33353	
BIC			961069				960957				364827	
LL			-480098				-480053				-182244	

Note: + p < 0.1 * p < 0.05; ** p < .01; *** p < .001.

Table S-2. *Full Results of multivariate logistic regression (Model 4).*

Variables	Cigarette		Avoided		Withdrawn		External	
Within Person								
Cigarette $_{t-1}$ (ρ)	1.282	***	0.352	***	0.383	***	-0.128	*
	(0.072)		(0.070)		(0.068)		(0.051)	
Avoided $_{t-1}$ (ρ)	-0.083		0.607	***	0.041		-0.068	
	(0.078)		(0.075)		(0.070)		(0.056)	
Withdrawn $_{t-1}$ (ρ)	0.036		0.119	+	0.355	***	0.145	**
	(0.077)		(0.069)		(0.076)		(0.053)	
External $_{t-1}$ (ρ)	-0.092	+	-0.067		-0.188	***	-0.458	***
	(0.053)		(0.052)		(0.050)		(0.041)	
Grade	0.523	***	0.405	***	0.551	***	-0.075	***
	(0.021)		(0.021)		(0.025)		(0.014)	
Between Person								
	$\alpha_{cigarettes}$		$\alpha_{avoided}$		$\alpha_{withdrawn}$		$\alpha_{external}$	
Intercept	2.181	***	-0.288	**	2.415	***	1.893	***
	(0.116)		(0.090)		(0.112)		(0.126)	
Initial Obs Cigarette $_{t=0}$	2.887	***						
	(0.105)							
Initial Obs Avoided $_{t=0}$			1.661	***				
			(0.081)					
Initial Obs Withdrawn $_{t=0}$					1.536	***		
					(0.083)			
Initial Obs External $_{t=0}$							1.176	***
							(0.045)	
Initial Obs Grade $_{t=0}$	0.418	***	0.496	***	0.651	***	-0.065	
	(0.059)		(0.056)		(0.060)		(0.043)	
Mean Grade	-1.084	***	-0.691	***	-0.927	***	0.054	
	(0.060)		(0.055)		(0.081)		(0.042)	
Male	0.103	+	0.576	***	0.988	***	-0.227	***
	(0.053)		(0.050)		(0.050)		(0.036)	
White	0.330	***	-0.518	***	-0.605	***	0.086	+
	(0.073)		(0.068)		(0.070)		(0.049)	
Cohort	-0.103	*	-0.024		-0.073		-0.151	***
	(0.052)		(0.050)		(0.048)		(0.036)	
Treatment Group	-0.023		-0.034		-0.193	***	-0.216	***
	(0.052)		(0.050)		(0.050)		(0.035)	
Between-Person Covariance								
Cigarette	3.261	***	0.127		0.466	***	0.199	**
	(0.192)		(0.057)		(0.084)		(0.061)	
Avoided			1.533	***	1.456	***	-0.214	***
			(0.075)		(0.082)		(0.052)	
Withdrawn					2.253	***	-1.226	***
					(0.139)		(0.064)	

Table S-2. *Full Results of multivariate logistic regression (Model 4).*

Variables	Cigarette	Avoided	Withdrawn	External	
External				2.522	***
				(0.173)	

Note: N=33,353; BIC=459,724. Gray shading indicates parameters not estimated in Models 1-3.
+ p < 0.1 * p < 0.05; ** p < .01; *** p < .001.

Table S-3: Comparison of effects estimated by ALT & Siena

Within Person

	Smoking	Avoided	Withdrawn	External
Smoking				
Avoided				
Withdrawn				
External				

Between Person

	Smoking	Avoided	Withdrawn	External
Smoking		■	■	
Avoided			■	
Withdrawn		■		
External		■	■	

Possible with SAOM. ☐   Intractable with current SAOM software. ▨   No estimates available in current SAOM software. ■

Note: Table design is consistent with dynamic relationships: rows measure smoking or isolation dimensions at a given time, and columns represent a subsequent (future) measure. All effects are estimated in the ALT in Model 4. Within-person effects are reported in Table 2 and Table S-2, with between-person effects and the associated covariance matrix reported only in Table S-2. More particularly, the within-person effects are the ρ effects constituting the first 4x4 matrix of the ALT table. The between-person relationship is the combination of the between-person intercept and the covariance matrix (reported as the upper-right triangular portion of a symmetrical matrix at the bottom of Table S-2). This covariance is easily converted to a correlation matrix by pre- and post- multiplying by the inverse of the variance (which are the diagonals). These provide the between-person correlations for individual propensities to exhibit the behaviors. For purposes of this table, we also assume that external orientation will be treated as a behavior parameter in the SAOM.