ONLINE SUPPLEMENTAL MATERIALS

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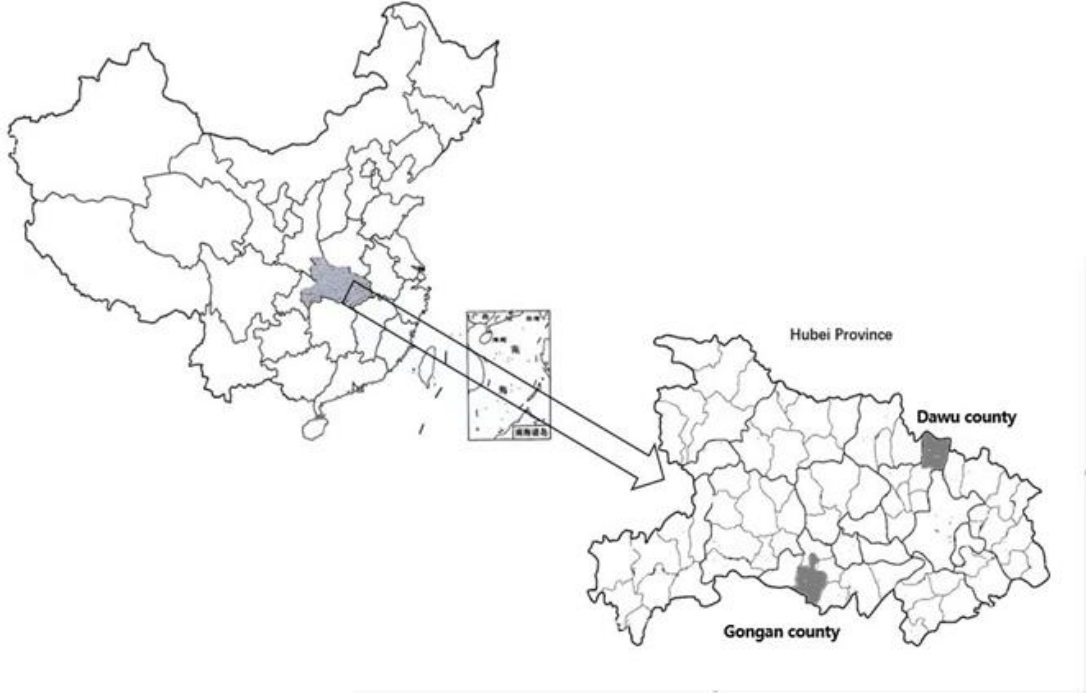
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Figure S1. Distribution map of the sample counties in central China, 2018-2019 (N=1389)

Table S1. Distribution of critical individual cognition factors of tobacco user sample in central China, 2018-2019 (N=254)

	Smoking hazards to one's own health				Smoking benefits to interpersonal communication				Difficulty in smoking cessation			
	Not at all (%)	Low (%)	High (%)	*p*	Not at all (%)	Low (%)	High (%)	*p*	Not at all (%)	Low (%)	High (%)	*p*
Demographic characteristics												
Gender												
Female	12.82	5.97	5.50	0.085	13.58	9.72	1.98	0.003	16.13	2.78	7.49	0.494
male	87.18	94.03	94.50		86.42	90.28	98.02		83.87	97.22	92.51	
Age												
≤49	7.69	16.42	15.60	0.019	8.64	19.44	12.87	0.122	9.68	16.67	13.37	0.951
50-59	15.38	17.91	18.35		12.35	16.67	21.78		19.35	19.44	16.58	
60-69	28.21	40.30	40.37		37.04	33.33	38.61		35.48	33.33	37.43	
≥70	48.72	25.37	25.69		41.98	30.56	26.73		35.48	30.56	32.62	
Education status												
Illiteracy	25.60	14.90	14.70	0.258	27.16	11.11	15.84	0.222	29.03	16.67	16.58	0.175
Primary school	42.30	32.80	41.30		39.51	40.28	38.61		41.94	30.56	40.64	
junior high school	26.90	32.80	32.10		24.69	30.56	35.64		19.35	27.78	33.16	
Senior high school and above	5.10	19.40	11.90		8.64	18.06	9.90		9.68	25.00	9.63	
Marital Status												
Married	75.64	82.09	84.40	0.144	71.60	84.72	86.14	0.017	80.65	80.56	81.28	0.904
Single/Divorced/Widowed/Other	24.36	17.91	15.60		28.40	15.28	13.86		19.35	19.44	18.72	
Economic Status												
Tight	48.72	46.27	52.29	0.016	49.38	41.67	55.45	0.093	32.26	44.44	53.48	0.092
Normal	41.03	47.76	46.79		48.15	54.17	36.63		58.06	52.78	41.71	
Well-off	10.26	5.97	0.92		2.47	4.17	7.92		9.68	2.78	4.81	

Table S2. Distribution of critical social environment factors of tobacco user sample in central China, 2018-2019 (N=254)

	Doctor's advice				Direct relatives smoking			No smoking regulations at workplace		
	Not at all (%)	Low (%)	High (%)	p	No (%)	Yes (%)	p	No (%)	Yes (%)	p
Demographic characteristics										
Gender										
Female	4.00	7.46	9.49	0.234	7.94	7.85	1	8.13	7.50	1
male	96.00	92.54	90.51		92.06	92.15		91.88	92.50	
Age										
≤49	24.00	13.43	9.49	0.093	15.87	12.57	0.347	13.13	25.00	0.075
50-59	18.00	17.91	16.79		11.11	19.37		18.13	25.00	
60-69	38.00	31.34	38.69		42.86	34.55		38.75	20.00	
≥70	20.00	37.31	35.04		30.16	33.51		30.00	30.00	
Education status										
Illiteracy	22.00	10.45	20.44	0.36	20.63	17.28	0.158	20.00	12.50	0.29
Primary school	34.00	47.76	37.23		34.92	40.84		38.75	32.50	
junior high school	28.00	26.87	33.58		25.40	32.46		30.63	35.00	
Senior high school and above	16.00	14.93	8.76		19.05	9.42		10.63	20.00	
Marital Status										
Married	84.00	68.66	86.13	0.136	77.78	82.20	0.437	82.50	85.00	0.707
Single/Divorced/Widowed/Other	16.00	31.34	13.87		22.22	17.80		17.50	15.00	
Economic Status										
Tight	38.00	47.76	54.74	0.032	50.79	49.21	0.972	50.00	52.50	0.959
Normal	54.00	43.28	43.07		44.44	45.55		45.00	42.50	
Well-off	8.00	8.96	2.19		4.76	5.24		5.00	5.00	

Table S3. Regression analysis of individual cognition and social environment factors on autonomy over tobacco after controlling for educational level and smoking history and habits (N=254)

	Total AUTOS		Withdrawal Symptoms		Psychological Dependence		Cue-induced Cravings	
	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*
Individual Cognition								
Smoking hazards to one's own health (ref= Not at all)								
low	-0.09(-0.25,0.07)	0.257	-0.14(-0.31,0.04)	0.117	-0.13(-0.29,0.04)	0.124	0.01(-0.16,0.18)	0.882
high	-0.1(-0.3,0.11)	0.344	-0.18(-0.4,0.03)	0.097	-0.1(-0.31,0.11)	0.35	0.02(-0.2,0.23)	0.88
Smoking hazards to others' health (ref= Not at all)								
low	0.11(-0.05,0.28)	0.166	0.13(-0.04,0.31)	0.125	0.13(-0.03,0.3)	0.12	0.05(-0.12,0.22)	0.579
high	0.08(-0.12,0.29)	0.419	0.09(-0.12,0.31)	0.395	0.11(-0.1,0.32)	0.316	0.03(-0.18,0.24)	0.783
Smoking benefits to interpersonal communication (ref= Not at all)								
low	-0.06(-0.21,0.08)	0.402	-0.08(-0.23,0.08)	0.32	-0.02(-0.17,0.12)	0.752	-0.07(-0.22,0.08)	0.382
high	0.11(-0.03,0.26)	0.125	0.09(-0.06,0.25)	0.234	0.14(-0.01,0.29)	0.071	0.08(-0.07,0.23)	0.287
Difficulty in smoking cessation (ref= Not at all)								
low	0.18(0.01,0.35)	0.042	0.15(-0.04,0.33)	0.119	0.22(0.05,0.4)	0.014	0.13(-0.05,0.3)	0.167
high	0.51(0.33,0.69)	<0.001	0.43(0.24,0.62)	<0.001	0.55(0.37,0.73)	<0.001	0.43(0.25,0.62)	<0.001
Social Environment								
Doctor's advice (ref=Not at all)								
low	0.05(-0.11,0.22)	0.53	0.02(-0.16,0.19)	0.84	0.11(-0.06,0.28)	0.19	0.02(-0.16,0.19)	0.858
High	0.14(-0.02,0.31)	0.093	0.19(0.01,0.37)	0.038	0.1(-0.07,0.28)	0.232	0.1(-0.08,0.28)	0.262
No smoking regulations at home (ref=No)								
Yes	0(-0.14,0.15)	0.962	-0.03(-0.19,0.12)	0.657	-0.03(-0.17,0.12)	0.729	0.07(-0.08,0.22)	0.349
Direct relatives smoking (ref=No)								
Yes	0.08(-0.06,0.22)	0.259	0.06(-0.08,0.21)	0.387	0.08(-0.07,0.22)	0.29	0.08(-0.07,0.22)	0.287

Elders smoking (ref=No)								
Yes	-0.06(-0.2,0.09)	0.444	-0.05(-0.21,0.11)	0.537	-0.07(-0.22,0.08)	0.375	-0.04(-0.19,0.11)	0.603
No smoking regulations at workplace (ref=No)								
Yes	-0.1(-0.23,0.04)	0.15	-0.1(-0.24,0.04)	0.174	-0.08(-0.21,0.06)	0.268	-0.09(-0.23,0.05)	0.185
Colleagues smoking (ref=No)								
Yes	0.01(-0.23,0.25)	0.935	0.11(-0.14,0.37)	0.378	-0.06(-0.3,0.18)	0.633	-0.03(-0.28,0.22)	0.804
Leaders smoking (ref=No)								
Yes	0.05(-0.19,0.28)	0.702	-0.12(-0.38,0.13)	0.346	0.16(-0.09,0.4)	0.208	0.1(-0.15,0.35)	0.434
Covariate								
Education status (ref= Illiteracy)								
Primary school	0.09(-0.09,0.26)	0.349	0(-0.19,0.19)	0.995	0.09(-0.09,0.28)	0.311	0.14(-0.04,0.33)	0.13
junior high school	0(-0.17,0.17)	0.964	-0.03(-0.21,0.16)	0.772	0(-0.17,0.18)	0.986	0.04(-0.14,0.22)	0.682
Senior high school and above	-0.05(-0.2,0.11)	0.574	-0.07(-0.24,0.1)	0.415	-0.02(-0.18,0.14)	0.841	-0.04(-0.2,0.13)	0.66
Time to the first cigarette of the day (ref=≥60minutes)								
31-59 minutes	0.04(-0.1,0.18)	0.558	0.11(-0.03,0.26)	0.127	0.03(-0.1,0.17)	0.631	-0.04(-0.18,0.1)	0.599
6-30 minutes	0.08(-0.07,0.22)	0.318	0.12(-0.04,0.27)	0.153	0.07(-0.08,0.22)	0.372	0.02(-0.13,0.18)	0.781
≤5 minutes	0.25(0.1,0.41)	0.002	0.27(0.11,0.44)	0.001	0.25(0.09,0.41)	0.002	0.17(0,0.33)	0.045
Number of cigarettes smoked per day (ref=≤10)								
11-20	0.23(0.08,0.38)	0.003	0.19(0.03,0.35)	0.023	0.24(0.08,0.4)	0.003	0.2(0.05,0.36)	0.012
21-30	0.19(0.04,0.33)	0.015	0.13(-0.03,0.29)	0.106	0.16(0.01,0.31)	0.041	0.22(0.07,0.38)	0.005
≥31	0.13(-0.01,0.26)	0.065	0.07(-0.07,0.22)	0.324	0.12(-0.02,0.26)	0.093	0.16(0.02,0.3)	0.025
Adjusted R^2	0.401		0.317		0.39		0.326	

Table S4. Regression analysis of individual cognition and the integration social environmental factors on autonomy over tobacco after controlling for educational level and smoking history and habits (N=254)

	Total AUTOS		Withdrawal Symptoms		Psychological Dependence		Cue-induced Cravings	
	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*
Individual Cognition								
Smoking hazards to one's own health (ref= Not at all)								
low	-0.1(-0.26,0.06)	0.217	-0.15(-0.32,0.02)	0.087	-0.13(-0.29,0.04)	0.126	0(-0.16,0.17)	0.981
high	-0.11(-0.31,0.1)	0.306	-0.21(-0.43,0.01)	0.064	-0.1(-0.31,0.11)	0.335	0.02(-0.19,0.23)	0.856
Smoking hazards to others' health (ref= Not at all)								
low	0.12(-0.04,0.28)	0.137	0.14(-0.03,0.31)	0.114	0.14(-0.03,0.3)	0.099	0.06(-0.11,0.23)	0.5
high	0.08(-0.13,0.29)	0.438	0.11(-0.12,0.33)	0.352	0.09(-0.12,0.31)	0.389	0.03(-0.19,0.25)	0.81
Smoking benefits to interpersonal communication (ref= Not at all)								
low	-0.07(-0.21,0.08)	0.364	-0.07(-0.22,0.09)	0.401	-0.04(-0.19,0.1)	0.565	-0.07(-0.23,0.08)	0.332
high	0.11(-0.03,0.26)	0.124	0.09(-0.06,0.25)	0.238	0.14(-0.01,0.28)	0.071	0.08(-0.07,0.24)	0.272
Difficulty in smoking cessation (ref= Not at all)								
low	0.16(-0.01,0.34)	0.062	0.15(-0.04,0.33)	0.122	0.2(0.02,0.37)	0.026	0.11(-0.07,0.29)	0.241
high	0.5(0.33,0.68)	<0.001	0.42(0.23,0.61)	<0.001	0.54(0.36,0.72)	<0.001	0.43(0.24,0.61)	<0.001
Social Environment								
Doctor's advice (ref=Not at all)								
low	0.05(-0.12,0.22)	0.557	0.02(-0.16,0.2)	0.826	0.11(-0.06,0.27)	0.211	0.01(-0.16,0.18)	0.909
High	0.16(-0.01,0.33)	0.07	0.2(0.02,0.38)	0.034	0.12(-0.05,0.29)	0.179	0.11(-0.06,0.29)	0.203
integration of non-smoking regulations environmental factors（ref=0）								
1	-0.08(-0.21,0.05)	0.242	-0.07(-0.21,0.08)	0.371	-0.1(-0.23,0.04)	0.15	-0.05(-0.19,0.08)	0.44
2	-0.04(-0.17,0.09)	0.531	-0.09(-0.23,0.05)	0.218	-0.03(-0.16,0.1)	0.624	0.01(-0.13,0.14)	0.905
Integration of family environmental factors（ref=0）								

	β(95%CI)	P	β(95%CI)	P	β(95%CI)	P	β(95%CI)	P
1	0.08(-0.08,0.24)	0.314	0.05(-0.12,0.22)	0.578	0.08(-0.09,0.24)	0.347	0.1(-0.07,0.27)	0.239
2	0.04(-0.13,0.2)	0.643	0.04(-0.14,0.21)	0.668	0.01(-0.15,0.18)	0.881	0.06(-0.12,0.23)	0.525
Integration of workplace environmental factors（ref=0）								
1	-0.04(-0.17,0.09)	0.553	0.01(-0.14,0.15)	0.917	-0.07(-0.21,0.07)	0.317	-0.05(-0.19,0.09)	0.473
2	0.07(-0.08,0.21)	0.346	0(-0.16,0.15)	0.965	0.11(-0.04,0.26)	0.138	0.09(-0.07,0.24)	0.264
Covariate								
Education status (ref= Illiteracy)								
Primary school	0.1(-0.08,0.28)	0.274	0.01(-0.18,0.21)	0.912	0.11(-0.08,0.29)	0.245	0.16(-0.03,0.35)	0.096
junior high school	0.02(-0.16,0.19)	0.86	-0.02(-0.21,0.16)	0.803	0.02(-0.16,0.19)	0.846	0.05(-0.13,0.23)	0.585
Senior high school and above	-0.03(-0.19,0.13)	0.724	-0.06(-0.24,0.11)	0.477	0(-0.16,0.17)	0.992	-0.02(-0.19,0.15)	0.846
Time to the first cigarette of the day (ref=≥60minutes)								
31-59 minutes	0.04(-0.1,0.17)	0.591	0.11(-0.04,0.25)	0.153	0.04(-0.1,0.18)	0.556	-0.05(-0.19,0.09)	0.506
6-30 minutes	0.06(-0.08,0.21)	0.395	0.1(-0.05,0.26)	0.19	0.07(-0.08,0.21)	0.371	0(-0.15,0.15)	1
≤5 minutes	0.25(0.1,0.4)	0.002	0.28(0.11,0.44)	0.001	0.25(0.09,0.41)	0.002	0.16(0,0.32)	0.047
Number of cigarettes smoked per day (ref=≤10)								
11-20	0.23(0.07,0.38)	0.005	0.18(0.02,0.35)	0.032	0.24(0.09,0.4)	0.003	0.2(0.04,0.36)	0.017
21-30	0.19(0.04,0.34)	0.012	0.13(-0.03,0.29)	0.107	0.17(0.02,0.32)	0.028	0.23(0.07,0.38)	0.004
≥31	0.15(0.01,0.28)	0.034	0.07(-0.07,0.22)	0.328	0.15(0.01,0.28)	0.04	0.19(0.05,0.33)	0.009
Adjusted R^2	**0.402**		**0.309**		**0.399**		**0.327**	

Table S5. Ridge regression analysis of individual cognition and 7 social environment factors on autonomy over tobacco after controlling for educational level and smoking history and habits (N=254)

	Total AUTOS		Withdrawal Symptoms		Psychological Dependence		Cue-induced Cravings	
	Adjusted β (95% CI)	p	Adjusted β (95% CI)	p	Adjusted β (95% CI)	p	Adjusted β (95% CI)	p
Individual Cognition								
Smoking hazards to one's own health (ref= Not at all)								
low	-0.06(-0.17,0.05)	0.318	-0.08(-0.2,0.04)	0.182	-0.07(-0.18,0.04)	0.216	0(-0.11,0.11)	0.983
high	-0.02(-0.14,0.09)	0.688	-0.1(-0.22,0.03)	0.142	-0.02(-0.14,0.1)	0.709	0.05(-0.07,0.17)	0.373
Smoking benefits to interpersonal communication (ref= Not at all)								
low	-0.07(-0.18,0.04)	0.214	-0.07(-0.19,0.04)	0.221	-0.05(-0.16,0.06)	0.362	-0.07(-0.18,0.05)	0.257
high	0.11(0,0.23)	0.056	0.1(-0.03,0.23)	0.12	0.13(0.01,0.24)	0.037	0.09(-0.03,0.2)	0.159
Difficulty in smoking cessation (ref= Not at all)								
low	0.05(-0.07,0.17)	0.421	0.04(-0.09,0.17)	0.559	0.07(-0.05,0.19)	0.26	0.03(-0.09,0.15)	0.667
high	0.38(0.26,0.5)	<0.001	0.33(0.19,0.46)	<0.001	0.4(0.27,0.52)	<0.001	0.33(0.21,0.45)	<0.001
Social Environment								
Integration of all social environmental factors (ref=0)								
1	0.02(-0.07,0.12)	0.65	0.05(-0.05,0.15)	0.35	0.03(-0.07,0.12)	0.614	-0.02(-0.11,0.08)	0.771
2	0.05(-0.05,0.14)	0.325	0.01(-0.09,0.11)	0.833	0.05(-0.04,0.15)	0.289	0.07(-0.03,0.17)	0.166
3	-0.04(-0.13,0.05)	0.406	0(-0.1,0.1)	0.959	-0.06(-0.15,0.03)	0.196	-0.04(-0.14,0.05)	0.36
4	0.04(-0.06,0.13)	0.437	0.03(-0.08,0.13)	0.597	0.04(-0.06,0.13)	0.45	0.04(-0.06,0.14)	0.434
5	0.08(-0.02,0.17)	0.117	0.05(-0.05,0.15)	0.362	0.09(0,0.19)	0.053	0.07(-0.03,0.16)	0.18
6	0.01(-0.09,0.11)	0.825	-0.04(-0.15,0.07)	0.486	0.01(-0.09,0.11)	0.809	0.06(-0.04,0.16)	0.262

7	-0.02(-0.13,0.08)	0.666	-0.04(-0.16,0.07)	0.458	0(-0.11,0.1)	0.962	-0.02(-0.12,0.09)	0.756
Covariate								
Education status (ref= Illiteracy)								
Primary school	0.09(-0.02,0.21)	0.117	0.04(-0.09,0.16)	0.588	0.11(-0.01,0.22)	0.084	0.12(0,0.24)	0.052
junior high school	0.01(-0.1,0.12)	0.888	-0.01(-0.13,0.11)	0.83	0.02(-0.1,0.13)	0.791	0.02(-0.09,0.14)	0.723
Senior high school and above	-0.05(-0.16,0.06)	0.362	-0.08(-0.2,0.04)	0.209	-0.01(-0.12,0.1)	0.852	-0.05(-0.17,0.06)	0.363
Time to the first cigarette of the day (ref=≥60minutes)								
31-59 minutes	0(-0.1,0.1)	0.96	0.05(-0.06,0.16)	0.381	0.01(-0.09,0.11)	0.863	-0.05(-0.16,0.05)	0.32
6-30 minutes	0.05(-0.06,0.16)	0.4	0.08(-0.04,0.2)	0.198	0.04(-0.07,0.15)	0.464	0.01(-0.1,0.12)	0.882
≤5 minutes	0.21(0.1,0.33)	<0.001	0.22(0.09,0.34)	0.001	0.22(0.11,0.34)	<0.001	0.15(0.03,0.27)	0.014
Number of cigarettes smoked per day (ref=≤10)								
11-20	0.15(0.04,0.26)	0.011	0.13(0,0.25)	0.045	0.16(0.05,0.28)	0.006	0.12(0.01,0.24)	0.041
21-30	0.13(0.02,0.24)	0.019	0.1(-0.02,0.22)	0.111	0.11(-0.01,0.22)	0.067	0.17(0.05,0.28)	0.005
≥31	0.12(0.02,0.22)	0.021	0.07(-0.04,0.18)	0.212	0.12(0.01,0.22)	0.027	0.15(0.04,0.25)	0.006
Adjusted R^2	**0.376**		**0.261**		**0.373**		**0.320**	

Table S6. Regression analysis of individual cognition and social environment factors on male's autonomy over tobacco after controlling for educational level and smoking history and habits (N=234)

	Total AUTOS		Withdrawal Symptoms		Psychological Dependence		Cue-induced Cravings	
	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*
Individual Cognition								
Smoking hazards to one's own health (ref= Not at all)								
low	-0.11(-0.25,0.03)	0.115	-0.16(-0.31,-0.01)	0.039	-0.12(-0.26,0.03)	0.108	-0.03(-0.18,0.12)	0.685
high	-0.14(-0.29,0.01)	0.059	-0.21(-0.37,-0.06)	0.008	-0.13(-0.28,0.02)	0.098	-0.04(-0.2,0.11)	0.579
Smoking benefits to interpersonal communication (ref= Not at all)								
low	-0.01(-0.15,0.13)	0.872	-0.03(-0.17,0.12)	0.732	0.02(-0.12,0.17)	0.757	-0.03(-0.17,0.12)	0.711
high	0.17(0.04,0.31)	0.014	0.13(-0.01,0.28)	0.069	0.19(0.05,0.33)	0.009	0.15(0.01,0.29)	0.043
Difficulty in smoking cessation (ref= Not at all)								
low	0.11(-0.05,0.27)	0.165	0.09(-0.08,0.26)	0.315	0.16(-0.01,0.32)	0.062	0.07(-0.1,0.23)	0.438
high	0.45(0.29,0.62)	<0.001	0.39(0.21,0.56)	<0.001	0.49(0.32,0.66)	<0.001	0.37(0.19,0.54)	<0.001
Social Environment								
No smoking regulations at workplace (ref= No)								
Yes	-0.07(-0.18,0.05)	0.265	-0.11(-0.24,0.01)	0.075	-0.04(-0.16,0.09)	0.572	-0.03(-0.16,0.09)	0.604
Covariate								
Education status (ref= Illiteracy)								
Primary school	0.15(-0.03,0.32)	0.098	0.15(-0.04,0.33)	0.123	0.14(-0.04,0.32)	0.126	0.12(-0.07,0.3)	0.208
junior high school	0.07(-0.1,0.23)	0.437	0.1(-0.08,0.28)	0.276	0.06(-0.11,0.24)	0.479	0.02(-0.16,0.2)	0.828
Senior high school and above	-0.03(-0.17,0.12)	0.688	-0.02(-0.17,0.14)	0.848	0.01(-0.14,0.16)	0.912	-0.07(-0.23,0.08)	0.334

Time to the first cigarette of the day (ref=≥60minutes)

	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p	Estimate (95% CI)	p
31-59 minutes	0.08(-0.05,0.2)	0.221	0.14(0,0.27)	0.045	0.07(-0.06,0.2)	0.3	0.01(-0.12,0.14)	0.913
6-30 minutes	0.07(-0.07,0.2)	0.323	0.1(-0.05,0.24)	0.185	0.06(-0.08,0.2)	0.413	0.03(-0.11,0.17)	0.678
≤5 minutes	0.2(0.06,0.35)	0.006	0.19(0.04,0.34)	0.015	0.22(0.07,0.37)	0.004	0.15(0,0.3)	0.052
Number of cigarettes smoked per day (ref=≤10)								
11-20	0.16(0.01,0.31)	0.04	0.13(-0.03,0.29)	0.115	0.16(0,0.31)	0.047	0.15(-0.01,0.3)	0.068
21-30	0.12(-0.02,0.26)	0.093	0.07(-0.07,0.22)	0.32	0.08(-0.06,0.23)	0.254	0.17(0.02,0.31)	0.024
≥31	0.07(-0.06,0.21)	0.288	-0.01(-0.15,0.13)	0.888	0.08(-0.06,0.22)	0.288	0.14(0,0.28)	0.057
Adjusted R^2	**0.378**		**0.299**		**0.350**		**0.296**	

Table S7. Regression analysis of individual cognition and social environment factors on adults aged under 85's autonomy over tobacco after controlling for educational level and smoking history and habits (N=249)

	Total AUTOS		Withdrawal Symptoms		Psychological Dependence		Cue-induced Cravings	
	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*	Adjusted β (95% CI)	*p*
Individual Cognition								
Smoking hazards to one's own health (ref= Not at all)								
low	-0.1(-0.24,0.04)	0.159	-0.14(-0.29,0.01)	0.062	-0.12(-0.26,0.03)	0.105	-0.01(-0.16,0.13)	0.866
high	-0.1(-0.25,0.04)	0.154	-0.17(-0.33,-0.02)	0.026	-0.1(-0.25,0.04)	0.161	0(-0.15,0.14)	0.958
Smoking benefits to interpersonal communication (ref= Not at all)								
low	-0.01(-0.14,0.13)	0.893	-0.02(-0.17,0.12)	0.745	0.01(-0.12,0.15)	0.847	-0.01(-0.15,0.12)	0.839
high	0.14(0.01,0.28)	0.035	0.09(-0.05,0.23)	0.218	0.16(0.03,0.3)	0.021	0.15(0.01,0.28)	0.04
Difficulty in smoking cessation (ref= Not at all)								
low	0.12(-0.04,0.28)	0.127	0.1(-0.07,0.27)	0.23	0.15(-0.01,0.31)	0.074	0.09(-0.08,0.25)	0.296
high	0.46(0.29,0.62)	<0.001	0.4(0.22,0.57)	<0.001	0.47(0.3,0.63)	<0.001	0.39(0.23,0.56)	<0.001
Social Environment								
No smoking regulations at workplace (ref= No)								
Yes	-0.08(-0.2,0.04)	0.181	-0.11(-0.23,0.02)	0.091	-0.06(-0.18,0.07)	0.367	-0.06(-0.18,0.07)	0.375
Covariate								
Education status (ref= Illiteracy)								
Primary school	0.11(-0.06,0.27)	0.197	0.05(-0.12,0.23)	0.551	0.12(-0.05,0.28)	0.168	0.12(-0.04,0.29)	0.143
junior high school	0.03(-0.13,0.18)	0.729	0(-0.16,0.17)	0.961	0.04(-0.12,0.2)	0.629	0.03(-0.13,0.2)	0.69
Senior high school and above	-0.06(-0.2,0.08)	0.397	-0.09(-0.24,0.06)	0.245	-0.01(-0.15,0.13)	0.912	-0.07(-0.21,0.08)	0.358
Time to the first cigarette of the day (ref=≥60minutes)								
31-59 minutes	0.04(-0.09,0.16)	0.568	0.09(-0.04,0.22)	0.17	0.03(-0.09,0.15)	0.629	-0.03(-0.15,0.1)	0.677

6-30 minutes	0.1(-0.03,0.23)	0.145	0.13(-0.01,0.28)	0.069	0.09(-0.05,0.22)	0.215	0.05(-0.09,0.19)	0.459
≤5 minutes	0.21(0.07,0.35)	0.004	0.21(0.05,0.36)	0.008	0.23(0.08,0.38)	0.002	0.14(-0.01,0.29)	0.058
Number of cigarettes smoked per day (ref=≤10)							
11-20	0.17(0.03,0.32)	0.019	0.13(-0.02,0.29)	0.089	0.18(0.03,0.32)	0.02	0.17(0.02,0.32)	0.028
21-30	0.12(-0.02,0.26)	0.085	0.07(-0.08,0.22)	0.354	0.09(-0.05,0.23)	0.224	0.18(0.03,0.32)	0.015
≥31	0.11(-0.02,0.24)	0.104	0.03(-0.11,0.17)	0.655	0.11(-0.03,0.24)	0.114	0.16(0.03,0.29)	0.02
Adjusted R^2	0.367		0.273		0.349		0.305	

Table S8. Mann-Whitney U test/ Kruskal-Wallis Tests to compare group differences of critical factors (N=254)

	P			
	Total AUTOS	**Withdrawal Symptoms**	**Psychological Dependence**	**Cue-induced Cravings**
Demographic characteristics				
Gender	0.232	0.927	0.326	0.13
Age	0.476	0.933	0.63	0.308
Education status	0.017	0.013	0.168	0.011
Marital Status	0.978	0.878	0.818	0.595
Economic Status	0.104	0.009	0.29	0.488
health status				
BMI	0.93	0.391	0.784	0.569
Number of outpatient visits in the last year	0.833	0.205	0.532	0.503
Number of hospitalizations in the last year	0.981	0.681	0.616	0.683
Smoking behavior				
Age at smoking onset	0.189	0.473	0.537	0.349
Time to the first cigarette of the day	<0.001	<0.001	<0.001	<0.001
Number of cigarettes smoked per day		<0.001	<0.001	<0.001
Individual Cognition				
Smoking hazards to one's own health	0.004	0.002	0.002	0.028
Smoking hazards to others' health	0.856	0.961	0.506	0.802
Smoking benefits to interpersonal communication	<0.001	0.004	<0.001	<0.001
Difficulty in smoking cessation	<0.001	<0.001	<0.001	<0.001
Social Environment				
Doctor's advice	0.186	0.033	0.276	0.036
No smoking regulations at home	0.803	0.487	0.663	0.199

Direct relatives smoking	0.033	0.05	0.214	0.044
Elders smoking	0.164	0.264	0.238	0.273
No smoking regulations at workplace	0.022	0.024	0.022	0.08
Colleagues smoking	0.508	1	0.624	0.605
Leaders smoking	0.288	0.647	0.301	0.258

Table S9. Ordinal logistic regression analysis of tobacco user, individual cognition and social environment factors on autonomy over tobacco after controlling for educational level, economic status and smoking history and habits with outcome variable scores classified by quartile (N=254)

	Total AUTOS		Withdrawal Symptoms		Psychological Dependence		Cue-Induced Cravings	
	Adjusted OR(95%CI)	*P*	*Adjusted OR(95%CI)*	*P*	*Adjusted OR(95%CI)*	*P*	*Adjusted OR(95%CI)*	*P v*
Demographic characteristics								
Education status (ref= Illiteracy)								
Primary school	3.46(1.5,7.96)	0.004	2.09(0.93,4.72)	0.076	3.03(1.32,6.99)	0.009	1.76(0.79,3.91)	0.165
junior high school	2.14(0.91,5.02)	0.081	1.58(0.68,3.67)	0.287	2.3(0.98,5.41)	0.056	1.26(0.55,2.86)	0.582
Senior high school and above	1.24(0.39,3.93)	0.711	0.78(0.24,2.46)	0.667	1.68(0.55,5.1)	0.364	0.47(0.15,1.45)	0.188
Economic Status (ref=Normal)								
Tight	1.97(1.09,3.55)	0.025	2.15(3.86,1.2)	0.01	1.47(2.62,0.82)	0.196	1.11(1.96,0.62)	0.727
Well-off	2.19(0.53,9.12)	0.28	2.03(8.36,0.49)	0.325	1.29(5.14,0.32)	0.723	1.49(6.21,0.36)	0.58
Smoking behavior								
Time to the first cigarette of the day (ref=≥60minutes)								
31-59 minutes	1.04(0.39,2.78)	0.936	2.42(0.91,6.43)	0.075	1.73(0.65,4.6)	0.273	0.68(0.26,1.8)	0.439
6-30 minutes	1.31(0.58,2.94)	0.517	1.94(0.86,4.38)	0.109	1.88(0.85,4.16)	0.119	0.86(0.39,1.89)	0.706
≤5 minutes	3.51(1.65,7.49)	0.001	3.07(1.44,6.53)	0.004	4.78(2.24,10.19)	0	2.13(1.02,4.42)	0.043
Number of cigarettes smoked per day (ref=≤10)								
11-20	3.54(1.7,7.37)	0.001	2.1(1.02,4.3)	0.043	2.7(1.31,5.53)	0.007	2.68(1.31,5.45)	0.007
21-30	3.82(1.26,11.53)	0.017	2.37(0.8,6.99)	0.119	2.21(0.76,6.45)	0.146	4.11(1.4,12.03)	0.01
≥31	2.16(0.86,5.4)	0.101	1.43(0.58,3.53)	0.436	2.55(1.03,6.33)	0.044	2.74(1.11,6.77)	0.029
Individual cognition								
Smoking hazards to one's own health (ref= Not at all)								
low	0.65(0.3,1.42)	0.284	0.53(0.24,1.13)	0.1	0.4(0.18,0.87)	0.02	0.95(0.45,2.04)	0.904
high	0.58(0.28,1.2)	0.14	0.44(0.21,0.9)	0.025	0.56(0.27,1.16)	0.12	1.02(0.5,2.07)	0.958

Smoking benefits to interpersonal communication (ref= Not at all)								
low	0.6(0.28,1.27)	0.179	0.7(0.33,1.48)	0.354	0.72(0.35,1.51)	0.388	0.64(0.31,1.33)	0.234
high	1.44(0.72,2.9)	0.3	1.21(0.61,2.41)	0.588	1.86(0.93,3.71)	0.08	1.47(0.74,2.89)	0.271
Difficulty in smoking cessation (ref= Not at all)								
low	1.05(0.28,3.94)	0.939	2.06(0.55,7.8)	0.285	2.43(0.69,8.48)	0.165	1.18(0.34,4.08)	0.793
high	6.49(2.38,17.73)	0	9.31(3.25,26.63)	0	6.92(2.53,18.92)	0	2.91(1.12,7.54)	0.028
Social environment								
Doctor's advice (ref=Not at all)								
low	0.81(0.34,1.94)	0.633	0.95(0.4,2.28)	0.913	1.49(0.63,3.51)	0.367	0.6(0.26,1.42)	0.248
High	1.66(0.77,3.57)	0.193	2.14(1,4.6)	0.051	1.55(0.73,3.3)	0.251	1.34(0.64,2.8)	0.443
Direct relatives smoking (ref=No)								
Yes	1.81(0.95,3.42)	0.07	1.98(1.04,3.74)	0.036	1.21(0.65,2.27)	0.549	1.56(0.84,2.9)	0.164
No smoking regulations at workplace (ref=No)								
Yes	0.64(0.3,1.34)	0.231	0.67(0.32,1.4)	0.289	0.57(0.27,1.18)	0.129	0.81(0.39,1.68)	0.577