

Supplemental Material for:

Investigating Progression in Substance Use Initiation Using a Discrete-Time Multiple Event

Process Survival Mixture (MEPSUM) Approach

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Table S1. Results from Omnibus Tests of Interactions Between Demographics and Externalizing Psychopathology Predicting Class Membership

Table S2. Odds Ratios [and Confidence Intervals] of the Interactions Between Demographics and Externalizing Psychopathology Predicting Class Membership

Table S3. Correlations Between Predictor Variables

PROGRESSION IN SUBSTANCE USE INITIATION

54

Table S1. Results from Omnibus Tests of Interactions Between Demographics and Externalizing Psychopathology Predicting Class Membership

Sex X Psychopathology				Ethnicity X Psychopathology			
Measure	χ^2	df	<i>p</i> -value	Measure	χ^2	df	<i>p</i> -value
Sex	232.36	3	< .0001	Ethnicity	132.69	9	< .0001
AUD	20.77	3	< .001	AUD	371.18	3	< .0001
Sex X AUD	2.87	3	.41	Ethnicity X AUD	15.77	9	.07
Sex	191.65	3	< .0001	Ethnicity	169.97	9	< .0001
CUD	24.21	3	< .0001	CUD	145.76	3	< .0001
Sex X CUD	2.11	3	.54	Ethnicity X CUD	16.55	9	.06
Sex	26.81	3	< .0001	Ethnicity	178.28	9	< .0001
ND	361.38	3	< .0001	ND	449.50	3	< .0001
Sex X ND	5.95	3	.11	Ethnicity X ND	10.81	9	.29
Sex	16.84	3	< .0001	Ethnicity	311.07	9	< .0001
Delinquency	409.99	3	< .001	Delinquency	562.72	3	< .0001
Sex X Delinquency	18.56	3	< .001	Ethnicity X Delinquency	15.39	9	.08

Notes. AUD = alcohol use disorder, CUD = cannabis use disorder, ND = nicotine dependence. Statistically significant interactions presented in bold text. Ethnicity was coded as a four-category variable, with Caucasian serving as the reference category.

Table S2. Odds Ratios [and Confidence Intervals] of the Interactions Between Demographics and Externalizing Psychopathology Predicting Class Membership

Class	Interaction Effect			
	Sex X AUD	Ethnicity X AUD		
		Black	Hispanic	Other
HS vs. MS	0.95 [0.80, 1.13]	1.12 [0.87, 1.45]	1.25 [0.95, 1.64]	1.41 [1.07, 1.87]
EA vs. MS	1.00 [0.85, 1.19]	0.76 [0.61, 0.95]	0.8 [0.61, 1.03]	0.88 [0.67, 1.16]
RA vs. MS	0.73 [0.58, 0.92]	0.68 [0.52, 0.88]	1.08 [0.76, 1.54]	0.37 [0.23, 0.58]
EA vs. HS	1.06 [0.93, 1.21]	0.68 [0.56, 0.81]	0.64 [0.47, 0.86]	0.62 [0.47, 0.83]
RA vs. HS	0.77 [0.62, 0.97]	0.60 [0.44, 0.82]	0.86 [0.60, 1.24]	0.26 [0.16, 0.42]
	Sex X CUD	Ethnicity X CUD		
HS vs. MS	0.88 [0.73, 1.05]	0.84 [0.61, 1.16]	1.12 [0.85, 1.48]	1.01 [0.64, 1.58]
EA vs. MS	0.75 [0.60, 0.93]	1.22 [0.94, 1.57]	0.69 [0.50, 0.96]	0.94 [0.58, 1.51]
RA vs. MS	1.17 [0.77, 1.77]	4.19 [2.34, 7.47]	0.78 [0.27, 2.28]	0.85 [0.29, 2.51]
EA vs. HS	0.86 [0.70, 1.05]	1.45 [1.15, 1.83]	0.62 [0.43, 0.88]	0.93 [0.52, 1.67]
RA vs. HS	1.33 [0.88, 2.01]	5.00 [2.90, 8.61]	0.70 [0.24, 2.04]	0.85 [0.28, 2.57]
	Sex X ND	Ethnicity X ND		
HS vs. MS	0.82 [0.70, 0.97]	1.21 [0.97, 1.52]	0.98 [0.74, 1.29]	0.80 [0.59, 1.09]
EA vs. MS	0.68 [0.58, 0.80]	1.55 [1.06, 2.26]	1.40 [0.99, 1.97]	0.65 [0.47, 0.90]
RA vs. MS	0.83 [0.69, 1.00]	1.04 [0.73, 1.48]	0.65 [0.45, 0.93]	0.40 [0.26, 0.61]
EA vs. HS	0.83 [0.70, 0.99]	1.28 [0.98, 1.67]	1.43 [1.06, 1.93]	0.81 [0.58, 1.13]
RA vs. HS	1.01 [0.79, 1.29]	0.86 [0.67, 1.10]	0.66 [0.46, 0.95]	0.49 [0.33, 0.73]
	Sex X Delinquency	Ethnicity X Delinquency		
HS vs. MS	0.90 [0.85, 0.95]	1.12 [1.04, 1.21]	1.05 [0.96, 1.15]	1.11 [1.00, 1.22]
EA vs. MS	0.73 [0.67, 0.80]	1.26 [1.14, 1.39]	1.24 [1.09, 1.41]	1.29 [1.12, 1.48]
RA vs. MS	0.65 [0.58, 0.72]	1.27 [1.11, 1.44]	1.15 [1.01, 1.32]	1.38 [1.19, 1.60]
EA vs. HS	0.82 [0.75, 0.89]	1.13 [1.02, 1.25]	1.19 [1.06, 1.32]	1.17 [0.40, 3.40]
RA vs. HS	0.72 [0.65, 0.79]	1.13 [1.00, 1.27]	1.10 [0.97, 1.25]	1.25 [1.09, 1.43]

Notes. HS = high school, MS = middle school, EA = early adulthood, RA = relative abstainer.

AUD = alcohol use disorder, CUD = cannabis use disorder, ND = nicotine dependence. Odds ratios for delinquency are calculated as a function of a one standard deviation change in delinquency. Ethnicity was coded as a four-category variable, with Caucasian serving as the reference category.

PROGRESSION IN SUBSTANCE USE INITIATION

56

Table S3. Correlations Between Predictor Variables

Demographics	Externalizing Psychopathology				Personality				
	AUD	CUD	ND	Delinquency	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Female	-0.21	-0.25	-0.11	-0.14	0.04	0.22	0.09	0.20	-0.11
White	0.18	0.04	0.16	-0.04	0.04	0.03	-0.04	-0.04	0.02
Black	-0.14	-0.01	-0.09	-0.02	-0.06	-0.01	0.05	0.03	0.01
Hispanic	-0.07	-0.03	-0.09	0.05	0.02	-0.02	0.01	0.03	-0.04
Other	-0.02	-0.02	-0.03	0.02	-0.02	0.00	0.00	0.01	0.00
Externalizing Psychopathology									
AUD	1.00				0.10	-0.03	-0.07	0.01	0.10
CUD	0.52	1.00			0.03	-0.03	-0.06	0.05	0.08
ND	0.27	0.37	1.00		0.01	-0.06	-0.09	0.10	-0.02
Delinquency	0.17	0.21	0.14	1.00	0.06	-0.09	-0.06	0.08	0.02
Personality									
Extraversion	0.10	0.03	0.01	0.06	1.00				
Agreeableness	-0.03	-0.03	-0.06	-0.09	0.25	1.00			
Conscientiousness	-0.07	-0.06	-0.09	-0.06	0.09	0.44	1.00		
Neuroticism	0.01	0.05	0.10	0.08	-0.11	-0.08	-0.11	1.00	
Openness	0.10	0.08	-0.02	0.02	0.22	0.20	0.05	-0.14	1.00

Notes. AUD = alcohol use disorder, CUD = cannabis use disorder, ND = nicotine dependence. Correlations between continuous variables (personality and delinquency) are Pearson coefficients. Correlations between dichotomous variables (demographics, AUD, CUD, and ND) are tetrachoric coefficients. Correlations between continuous and dichotomous variables are point biserial coefficients.