

Early Drug Use Resistance Patterns as a Latent Moderator of keepin' it REAL's Impact

Suellen Hopper, Michael L. Hecht, Stephanie T. Lanza, and Xianming Tan
The Methodology Center, The Pennsylvania State University

Abstract

Teaching resistance skills and building refusal confidence has been one of the predominant approaches to school-based substance abuse prevention in the last decade. One exemplary program that teaches resistance skills is keepin' it REAL. Findings have been mixed whether this approach does indeed lead to reduced substance use. A first step is to assess whether skills based programs increase skills. Latent class analysis was used to assess heterogeneity in preadolescents' resistance skills and refusal confidence. A 4-class solution of resistance skills showed that about half (52%) of preadolescents were highly competent, 17% were characterized by high confidence but little knowledge, 15% were knowledgeable but not confident, and 15% had little knowledge and low confidence (at-risk). Multiple group latent transition analysis showed a 10% increase into the highly competent skills profile over time (from beginning of 5th grade to end of 6th grade) for students receiving keepin' it REAL compared to students in control schools whose membership into high competence only increased by 2%. Three of the four skills profiles benefitted from the program. Membership into the at-risk profile did not show movement into a more skilled profile over time. Finally, 6th grade skill profiles were used to predict 8th grade recent substance use. Only membership into the highly competent skill profile correlated with lower substance use.

Research Questions

RQ1. Are there meaningful subgroups of preadolescent skill classes based on their knowledge of four prototypical resistance skill strategies (refuse, explain, leave, avoid) and three refusal confidence items (to refuse offers of cigarettes, alcohol, and marijuana) from family or friends?

RQ2. Are there differential treatment effects of *keepin' it REAL* conditional on preadolescents initial skills profile at the beginning of 5th grade?

H1. Adolescents exposed to the *keepin' it REAL* who are not fully competent at Time 1 (prior to treatment) will be more likely to transition to higher competence at Time 2 (at the end of 6th grade, after receiving treatment).

H2. Adolescents who start out highly competent are more likely to maintain that status as a result of the intervention.

Methods

Sample population

Mean age 11, 86% Hispanic from suburbs of Phoenix, AZ, 51% female, 29 schools

Measures

Hypothetical resistance skills (refuse, explain, avoid, leave): 4 items

If your friend offered you a beer at a party would you ...say no without giving a reason why [refuse], ...give an explanation or excuse to turn down the beer? [explain] ...avoid getting into that situation because you think beer might be offered there? [avoid] ...just leave the situation without accepting the beer? [leave].

Refusal confidence (for cigarettes, alcohol, marijuana): 3 items

Are you sure you would say no if ...a family member offered you alcohol? ...a close friend offered you marijuana? ...a kid at school offered you a cigarette?

Analysis

Latent class analysis

Multiple group transition analysis

Multiple pseudo-class draw used to have latent classes predict later substance use

Latent Class Analysis

Parameter Estimates for the 4-Class LCA Model of Preadolescent Resistance Skills at Baseline (beginning of 5th grade)

	<i>Latent Classes</i>			
	At-Risk	Confident	Skillful	Highly Competent
	<i>Latent Class Prevalences</i>			
	15.0%	17.6%	15.3%	52.1%
<i>(observed variable)</i>	<i>Item Response Probabilities</i>			
Refusal Confidence (Marijuana)	.07	.94	.10	.96
Refusal Confidence (Alcohol)	.00	.98	.05	.99
Refusal Confidence (Cigarettes)	.02	.96	.04	.99
Resist Skill (Refuse)	.04	.13	.68	.80
Resist Skill (Explain)	.06	.07	.82	.85
Resist Skill (Avoid)	.03	.08	.86	.91
Resist Skill (Leave)	.09	.19	.90	.95

N = 1929

Goodness of Fit Indices Comparing 2,3, and 4 Latent Skill Profile Models

Classes	G ²	df	AIC	BIC	CAIC
2	2494.30	112	2524.30	2607.77	2622.77
3	1076.48	104	1122.48	1250.47	1273.47
4	284.72	96	346.72	519.22	550.22

Skill Profiles Predicting Substance Use

Among the 797 students reporting recent substance use in 8th grade, the probability of use among those in the Highly Competent group was less than the population's probability of recent substance use (.40 compared to .47). The remaining three skill profiles' probability of reporting recent use was higher than the population probability.

Conclusions

This study demonstrated the utility of LCA and LTA in understanding adolescent substance use, and in conducting a detailed evaluation of an intervention effect. We identified four underlying (i.e., latent) resistance skill profiles that were supported by robust measurement. Subsequent analyses (i.e., multiple group LTA) of intervention effects suggested differential treatment effects. Students' membership into the skill profile with the lowest skill levels (the At-Risk skill profile) need to be targeted possibly using either a selected implementation strategy or a broader range of skills in universal early interventions. Findings were consistent with communication competence and developmental theories, suggesting that prevention science can be advanced by these more nuanced approaches to substance use and prevention research.

Multiple Group Latent Transition Analysis

Prevalence of Resistance Skill Profiles at Each Time and Probabilities in Profile Membership Over Time for Treatment and Control Groups

Latent Profiles	Skillful	Confident	Highly Competent	At-Risk
<i>Skill Profile Prevalences</i>				
5 th Grade Control				
Time 1	.1571	.1785	.5170	.1475
Time 2	.1045	.2152	.5374	.1428
5th Grade <i>keepin' it REAL</i>				
Time 1	.1428	.1944	.5087	.1540
Time 2	.1072	.1862	.5954	.1113
Transition probabilities Control				
Time 1	Time 2			
	Skillfull	Confident	High Competent	At Risk
Skillful	.1819	.1893	.3713	.2575
Confident	.0974	.2875	.5137	.1014
Highly Competent	.0728	.1678	.6600	.0994
At Risk	.1421	.3216	.3131	.2231
Transition probabilities <i>keepin' it REAL</i>				
Time 1	Time 2			
	Skillfull	Confident	High Competent	At-Risk
Skillfull	.1721	.2267	.4615	.1398
Confident	.1198	.1851	.5724	.1227
Highly Competent	.0672	.1479	.7234	.0615
At Risk	.1632	.2763	.3258	.2347

N = 1983

Limitations

One limitation to be noted in this study is that the analyses did not account for clustering within schools. It is possible that the overall amount of heterogeneity in resistance skills in the population may be underestimated. However, we believe that this reinforces the fact that the four skill profiles identified here are meaningfully different. It is also important to note that the sample was predominantly Hispanic and therefore, the skill classes identified may be characteristic of this sample and not generalizable to other samples.

This research was supported by:
NIDA R01 DA005621 PI: Hecht
P50DA010015 and T32DA017629