Influences on adolescent substance use and attitudes towards the D.A.R.E. prevention program

Erin Caine; Advised by Dr. Elizabeth Johnson-Young
Department of Communication and Digital Studies

Introduction

Substance Use. According to the Centers for Disease Control and Prevention (CDC), substance use "refers to the use of selected substances, including alcohol, tobacco products, drugs, inhalants, and other substances that can be consumed, inhaled, injected, or otherwise absorbed into the body with possible dependence and other detrimental effects" (CDC, 2023a).

Adolescent Prevalence.

- **Alcohol**. 5.8 million youth between 12 and 20 reported drinking more than "just a few sips" of alcohol in 2022 (U.S. Department of Health and Human Services, 2024).
- **Legal Drugs**. In 2023, 12.6% of high school students reported current tobacco use in any form within the past 10 days, 10% of which came from e-cigarettes (CDC, 2023b). In 2019, 37% of high school students reported using marijuana at least once in their lifetime and 22% said they used it within the past 30 days (CDC, 2021).
- **Illegal Drugs.** 15% of high school students reported using cocaine, inhalants, heroin, methamphetamines, hallucinogens, or ecstasy at least once in their lifetime and 14% of students reported misusing prescription opioids (CDC, 2022).

The effects of substance use include impaired decision making, increased risk for disease and cancer, decline in mental health and brain development, etc.

Literature Review

D.A.R.E. While D.A.R.E. is the most popular school-based prevention program in the United States, it has long been criticized by the public for being ineffective at creating a long-lasting change in students' knowledge, attitudes, and behavior surrounding substance use. D.A.R.E. adopted the "keepin' it REAL program" (kiR) to develop improved elementary and middle school curriculum (Birkeland et al., 2005; Caputi & McLellan, 2017; Knopf, 2017; West & O'Neal, 2004). Due to a gap in research, this study seeks to learn more about the long-term effects of D.A.R.E. kiR.

Theory of Planned Behavior (TPB). The TPB is frequently used to predict adolescent substance use and can be used in prevention programs to shape how student feel about substance use. It proposes that behavior is primarily determined by behavioral intention and perceived behavioral control. Behavioral intention is determined by attitudes; perceived social norms, perceived self-efficacy; and perceived behavioral control (Armitage et al., 1999; Lin et al., 2021).

Sensation-Seeking. Sensation-seeking is widely regarded by scholars as a major personality contributor to risky decision making and substance use. Sensation-seeking tendencies are "the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience" (Zuckerman, 1994, p. 27, as cited in Lauriola et al., 2014).

Fear Appeals. Substance use prevention programs and campaigns frequently implement fear appeals (Simpson, 2017). Witte (1994) defined fear appeals as persuasive messages that highlight a threat to generate the emotion fear, but that then show possible solutions to the threat. According to Witte's extended parallel processing model (EPPM), fear is affected by the audience's perceptions of threat and efficacy messages.

Research Questions

RQ 1: How does experience with D.A.R.E. affect behaviors relating to substance use?

RQ 2: How do attitudes, norms, and perceived behavioral control predict substance use behaviors?

RQ 3: What is the influence of sensation-seeking tendencies on an individual's post-D.A.R.E. behaviors?

RQ 4: What are people's attitudes towards the program, whether they experienced the program or have simply heard of it? Do people who have experienced the program express and recall the use of fear (i.e. feeling scared)?

Methods

Ethics and Sampling. Prior to being published, this survey was approved by the University of Mary Washington's Institutional Review Board for research involving human participants. This survey utilized convenience and snowball sampling and all participants had to be between the ages of 18 and 24. The total sample size of this survey was *N = 125*. However, only 62.4% *(n = 78)* of participants completed the survey.

Measures.

- **D.A.R.E. Experiences**: 60% of participants experienced D.A.R.E. *(n = 74)*, while 40% did not *(n = 50)*. Of those who experienced D.A.R.E., 22 respondents said they went through the program in K-4, 50 said 5-6, 19 said 7-8, and 7 said 9-12. Of those who did not experience D.A.R.E., 74% said they have heard of it *(n = 37)* and 26% had not *(n = 13)*.
- **D.A.R.E. Perceptions:** Those who experienced D.A.R.E. were asked several open-ended questions about their thoughts on the program.
- **Behaviors With and Without D.A.R.E., Behavioral Intention and Current Behaviors, TPB, and Sensation-Seeking.** See table 1.

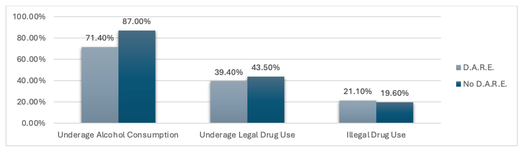
Table 1. Descriptive Statistics

	Mean	St. Deviation	N
Pre-D.A.R.E. Alcohol Behaviors	1.92	0.21	71
Pre-D.A.R.E. Legal Drug Behaviors	1.96	0.14	71
Pre-D.A.R.E. Illegal Drug Behaviors	2.00	0.00	71
Post-D.A.R.E. Alcohol Behaviors	1.23	0.37	71
Post-D.A.R.E. Legal Drug Behaviors	1.51	0.44	71
Post-D.A.R.E. Illegal Drug Behaviors	1.75	0.41	71
Alcohol Behaviors Without D.A.R.E.	1.12	0.03	46
Legal Drug Behaviors Without D.A.R.E.	1.42	0.41	46
Illegal Drug Behaviors Without D.A.R.E.	1.73	0.40	46
Wanting to Use in the Next Two Weeks	2.02	1.12	115
Planning to Use in the Next Two Weeks	2.03	1.24	115
Use Within the Past Two Weeks	2.20	1.37	115
Perceived Behavioral Control	3.78	0.61	88
Social Norms	2.15	0.67	109
Attitudes	2.9	1.07	89
Sensation-Seeking	7.13	1.51	79

Results

RQ 1. Those who said that they never used any substances underage after D.A.R.E. were then asked to rank to what extent that decision was influenced by D.A.R.E. On the five-point scale that was used with 1 as no impact and 5 as complete impact, the mean was $M = 2.3$, $SD = 1.12$.

Chart 1. Underage Substance Use With and Without D.A.R.E.



RQ 1 (cont.)- 3. Linear Regression Tests were run to determine which variables predict behavioral intentions and current use (tables 2-4). Correlations were also found (table 5).

Table 2. Dependent Variable of Wanting to Use Substances in the Next Two Weeks

	Model 1	Model 2	Model 3
Block 1: D.A.R.E. Experience			
Did you experience D.A.R.E.?	.016	-.021	.026
Block R^2 (%)	0%		
Block 2: TPB			
Perceived Behavioral Control		.323**	.103
Social Norms		.270*	.128
Attitudes		-.032	-.023
Block R^2 Change (%)		23.8%	
Block 3: Psychological Variables			
Sensation-Seeking			.495***
Block R^2 Change (%)			15.3%
Total R^2 (%)			39.1%

Notes: $N = 79$. Cell entries are the standardized regression coefficients, $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$

Table 3. Dependent Variable of Planning to Use Substances in the Next Two Weeks

	Model 1	Model 2	Model 3
Block 1: D.A.R.E. Experience			
Did you experience D.A.R.E.?	**.045**	**.009**	**.051**
Block R^2 (%)	**0.2%**		
Block 2: TPB			
Perceived Behavioral Control		**.313****	**.113**
Social Norms		**.266***	**.137**
Attitudes		**.002**	**.010**
Block R^2 Change (%)		**23.6%**	
Block 3: Psychological Variables			
Sensation-Seeking			**.451*****
Block R^2 Change (%)			12.7%
Total R^2 (%)			36.5%

Notes: $N = 79$. Cell entries are the standardized regression coefficients, $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$

Table 4. Dependent Variable of Substance Use in the Past Two Weeks

	Model 1	Model 2	Model 3
Block 1: D.A.R.E. Experience			
Did you experience D.A.R.E.?	.127	.083	.131
Block R^2 (%)	1.6%		
Block 2: TPB			
Perceived Behavioral Control		.405***	.180
Social Norms		.162	.017
Attitudes		-.003	.006
Block R^2 Change (%)		24.1%	
Block 3: Psychological Variables			
Sensation-Seeking			.506***
Block R^2 Change (%)			16.0%
Total R^2 (%)			41.6%

Notes: $N = 79$. Cell entries are the standardized regression coefficients, $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$

Results Cont.

Table 5. Bi-Variate Correlations

	Wanting to Use in Next Two Weeks	Planning to Use in Next Two Weeks	Use Within the Past Two Weeks
Perceived Behavioral Control	$r(88) = .473$, $p < .001$	$r(88) = .463$, $p < .001$	$r(88) = .524$, $p < .001$
Social Norms	$r(109) = .325$, $p < .001$	$r(109) = .322$, $p < .001$	$r(109) = .256$, $p < .05$
Attitudes	$r(89) = .055$, $p > .05$	$r(89) = .078$, $p > .05$	$r(89) = .095$, $p < .05$
Sensation-Seeking	$r(79) = .606$, $p < .001$	$r(79) = .575$, $p < .001$	$r(79) = .322$, $p < .001$

RQ 4. Throughout the open-ended questions, a mixture of positive and negative attitudes emerged. Many respondents explained that there were greater influences on their knowledge, attitudes, and behaviors relating to substance use, such as family, school counselors, religion, etc. While some said the program may have affected them at least temporarily, others said that they were too young for the program to make an impact.

Fear appeals were widely recognized. Some believed that fear was effective because they did not want to use substances because of the program, but others were critical of it being "fear mongering" used on young children. A few respondents explained how threat messages were emphasized more than efficacy messages "I [don't think I] effectively know the harms of the substances. I think that [I] was more scared than educated."

Discussion

Implications. Results show that experience with D.A.R.E. was not significantly related to behavioral intentions and current use. Perceived self-efficacy, social norms, and sensation-seeking were significant predictors of each of the dependent variables, with sensation-seeking becoming the most significant once it was included in the model. While program effectiveness was low, there were some positive attitudes towards the program that indicate that the program may be more impactful than the statistical tests showed. These results could be used as justification for implementing more direct messages that address the TPB variables, sensation-seeking traits, and balance the use of fear to adhere to the EPPM.

Future Research. Future research could involve more advanced forms of data analysis for both the quantitative and qualitative data.

Limitations. Limitations for this study include a large number of incomplete responses; an unrepresentative sample (largely white females); and reports of confusing measures for attitudes (TPB), though reliability tests came back high.

References

Armitage, C. J., Conner, M., Justin, L., & Willetts, D. (1999). Different perceptions of control: Applying an extended theory of planned behavior to legal and illegal drug use. Basic and Applied Social Psychology, 21(4), 301–316. https://doi.org/10.1207/S15324834BASP2104_4
Birkeland, S., Murphy-Graham, E., & Weiss, C. (2005). Good reasons for ignoring good evaluation: The case of the drug abuse resistance education (D.A.R.E.) program. Evaluation and Program Planning, 28(3), 247–256. https://doi.org/10.1016/j.evalprogplan.2005.04.001
Caputi, T. L., & McLellan, T. A. (2017). Truth and D.A.R.E.: Is D.A.R.E's new Keepin' it REAL curriculum suitable for American nationwide implementation? Drugs: Education, Prevention, & Policy, 24(1), 49–57. https://doi.org/10.1080/09687637.2016.1208731
Centers for Disease Control and Prevention. (2021, September 8). Marijuana and public health: Teens. https://www.cdc.gov/marijuana/health-effects/teens.html
Centers for Disease Control and Prevention. (2022, September 29). High risk substance use in youth. https://www.cdc.gov/healthyyouth/substance-use/index.htm
Centers for Disease Control and Prevention. (2023a, June 26). Substance use – Health, United States. https://www.cdc.gov/nchs/hus/sources-definitions/substance-use.htm
Centers for Disease Control and Prevention. (2023b, November 2). Youth and tobacco use. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/index.htm
Centers for Disease Control and Prevention. (2024, February 29). Drinking too much alcohol can harm your health. Learn the facts. https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm
Knopf, A. (2017). New D.A.R.E., police facilitate decision-making skills to prevent drug use. The Brown University Child and Adolescent Behavior Letter, 33(9), 4–5. https://doi.org/10.1002/cbl.30240
Lauriola, M., Panno, A., Levin, I. P., & Lejuez, C. W. (2014). Individual differences in risky decision making: A meta-analysis of sensation-seeking and impulsivity with the Balloon Analogue Risk Task. Journal of Behavioral Decision Making, 27(1), 20–36. https://doi.org/10.1002/bdm.1784
Lin, L.-C., Huang, C.-M., Hsu, H.-P., Liao, J.-Y., Lin, C.-Y., & Guo, J.-L. (2021). Integrating health literacy into a theory-based drug-use prevention program: A quasi-experimental study among junior high students in Taiwan. BMC Public Health, 21(1), 1–1768. https://doi.org/10.1186/s12889-021-11930-5
Simpson, J. K. (2017). Appeal to fear in health care: Appropriate or inappropriate? Chiropractic & Manual Therapies, 25(1), 27–27. https://doi.org/10.1186/s12998-017-0157-8
University of Wisconsin-Madison. (n.d.). Sensation seeking scale (SSS). Addiction Research Center. https://arc.psych.wisc.edu/self-report/sensation-seeking-scale-sss/
U.S. Department of Health and Human Services. (2024, February). Get the facts about underage drinking. National Institute on Alcohol Abuse and Alcoholism. https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/underage-drinking
West, S. L., & O'Neal, K. K. (2004). Project D.A.R.E. outcome effectiveness revisited. American Journal of Public Health, 94(6), 1027–1029. https://doi.org/10.2105/AJPH.94.6.1027