



Coming to the new D.A.R.E.: A preliminary test of the officer-taught elementary keepin' it REAL curriculum[☆]



L. Edward Day^{a,*}, Michelle Miller-Day^b, Michael L. Hecht^c, Desiree Fehmie^{d,1}

^a Department of Sociology, Chapman University, 1 University Drive, Orange, CA 92866, United States

^b Department of Communication Studies, Chapman University, 1 University Drive, Orange, CA 92866, United States

^c REAL Prevention LLC, 765 Long Hill Road, Gillette, NJ 07933, United States

^d Earl Babbie Research Center, Chapman University, 1 University Drive, Orange, CA 92866, United States

HIGHLIGHTS

- The first evaluation of the new D.A.R.E. America elementary school program is presented.
- Students exposed to treatment rank higher in social and emotional skills that are foundational for resistance skills.
- D.A.R.E. students scored higher in measures of knowledge of the curriculum, indicating the program transmits its core ideas.

ARTICLE INFO

Keywords:

D.A.R.E.
Substance use prevention
Keepin' it REAL
Elementary school

ABSTRACT

The present study reports a preliminary evaluation of D.A.R.E.'s new elementary school keepin' it REAL substance abuse prevention program. Given the widespread dissemination of D.A.R.E., this evaluation, even though of short term effects, has important implications for national prevention efforts. The new prevention curriculum teaches social and emotional competencies such as decision making and resistance skills. Social and emotional competencies and other risk factors were examined among students ($N = 943$) in 26 classrooms, 13 classrooms in the treatment condition ($n = 359$) and 13 classrooms in the control condition ($n = 584$) using a quasi-experimental matched group design. Pretest comparisons of treatment and control groups were completed, along with attrition analyses, and hierarchical logistic and linear regressions were computed to assess the intervention. The results revealed that the intervention produced significant effects on preventative factors such as the likelihood of resisting peer pressure, increased responsible decision making knowledge and decision-making skills, and confidence in being able to explain why they would refuse offers of cigarettes. The results of this study suggest that D.A.R.E.'s elementary keepin' it REAL program has promise as a social and emotional learning (SEL) based prevention program.

1. Introduction

Substance abuse continues to be a concern with initiation of use typically occurring in early adolescence and prevalence rates of alcohol, tobacco, and marijuana use increasing throughout adolescence (Miech, Johnston, O'Malley, Bachman, & Schulenberg, 2015), ultimately resulting in potential health and social problems (Reid, Eddy, Fetrow, & Stoolmiller, 1999). While studies of drug use by children have been limited (Donovan, 2014), early experimentation is clearly a risk factor for later abuse (Jackson, Barnett, Colby, & Rogers, 2015).

Fortunately, significant progress has been made in the prevention

field for developing effective substance abuse prevention interventions (Tobler et al., 2000) with the most significant progress in programs for middle schools (Ennett et al., 2003). Although evidence suggests that substance use can be prevented or reduced when integrated with efforts to develop students' social and emotional skills in childhood (Belfield et al., 2015; Domitrovich, Durlak, Staley, & Weissberg, 2017; Zinsler, Weissberg, & Dusenbury, 2013), relatively few universal substance abuse prevention programs have been developed and evaluated for elementary school students. *Keepin' it REAL (kiR)* is an evidence-based, universal substance abuse prevention program originally developed for middle school students (Hecht, Graham, & Elek, 2006). This curriculum

[☆] This research was funded by D.A.R.E. America, P.O. Box 512090, Los Angeles, CA 90051-0090

* Corresponding author.

E-mail addresses: lday@chapman.edu (L.E. Day), millerda@chapman.edu (M. Miller-Day), michael@real-prevention.com (M.L. Hecht).

¹ Present address: A.B.E.D.I., Inc., 2091 Business Center Drive, Suite 150, Irvine, CA 92612.

was adopted by D.A.R.E. America for dissemination at the middle school level and provided the foundation for the creation of a new D.A.R.E. elementary school (EkiR) curriculum. The purpose of this study is to briefly describe the new elementary school-based substance use prevention curriculum and present evidence of its effects.

2. Prevention science and the evolving D.A.R.E. curriculum

Rarely in the prevention field has one group occupied as dominant a position as D.A.R.E. America's school-based substance use initiative. From its inception in the early 1980s to its current status, serving almost a million students in the U.S. as well as those in 52 other countries, the success of their curriculum has significant implications for our nation's public health. Unfortunately, scientific evaluations of early D.A.R.E. programs rarely demonstrated efficacy (Ennett, Tobler, Ringwalt, & Flewelling, 1994; US General Accounting Office., 2003). As a result, D.A.R.E. initiated a review of existing, evidence-based programs and in 2008 licensed the *keepin' it REAL* (kiR) middle school curriculum. *Keepin' it REAL* (kiR) is a culturally grounded (Hecht & Krieger, 2006), narrative (Miller-Day & Hecht, 2013), multicultural middle school curriculum (Colby et al., 2013). It is based on narratives collected from hundreds of youth across the country describing their experiences with drug offers and other problematic situations that require a sophisticated set of communication and relationship management skills (Colby et al., 2013). The curriculum is highly interactive and engaging (Colby et al., 2013) and previous group randomized trials demonstrated it reduces substance use as much as 14 months after the intervention ends (Hecht et al., 2006; Pettigrew et al., 2015). After successful adaptation for officer delivery, the new D.A.R.E. middle school curriculum was implemented in 2009.

A similar review convinced D.A.R.E. to work with the kiR developers to create an elementary curriculum that articulates with the middle school lessons, leading to the development of the elementary *keepin' it REAL* (EkiR) curriculum which was implemented in 2012. The prevention strategy guiding the development of EkiR was social emotional learning theory (SEL) (Durlak, Domitrovich, Weissberg, & Gullotta, 2015). Social and emotional learning is the process through which social-emotional competence develops. Through SEL, children and youth acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions (Durlak et al., 2015). SEL programming is based on the understanding that improving proximal skills such as social and emotional competencies are critical to being a good student, citizen, and worker; and many distal risky behaviors (e.g., drug use, violence, bullying, and dropout) can be prevented or reduced by integrated efforts to develop students' social and emotional skills (Domitrovich et al., 2017). This approach has a strong empirical base with a growing body of research linking SEL to improved prosocial behavior and academic achievement and reductions in aggression and substance use (Belfield et al., 2015; Domitrovich et al., 2017; Durlak et al., 2015).

Given the prominence of D.A.R.E. in the prevention community, the effectiveness of this new elementary curriculum is an immediate concern. This study was designed to pilot procedures for a larger study and provides an evaluation of short term effects of the program. Consistent with previous research (Donovan, 2014; Miech et al., 2015), substance use among this elementary school sample was, as anticipated, negligible (at pretest, last 30-day use of alcohol and tobacco were 3.8% and 0.5%, respectively) and thus this first short-term evaluation focused on competencies, attitudes, and cognitions rather than actual drug use. We emphasized decision making, measuring both knowledge and skills, because the curriculum focuses very heavily on this competency with four lessons largely devoted to, and five other lessons practicing, these skills. We also measure recall of the basic concepts, called definitional knowledge below. Finally, we examined 2 proximal outcomes, interest

in smoking and attitudes toward police, the former because it is a predictor of future smoking and the latter as an evaluation of D.A.R.E. as a community policing strategy. The following hypotheses were tested:

H1. EkiR will increase definitional knowledge, decision-making knowledge, decision-making skill, refusal confidence, self-control, communication skills, and positive attitudes toward police.

H2. EkiR will decrease susceptibility to peer pressure and interest in smoking.

3. Methods

3.1. Sample

Methods and procedures used in this study were approved by the Institutional Review Board of a western university. A quasi-experimental pretest-posttest, matched group design was implemented during spring 2014 in 26 6th grade classrooms from 7 elementary schools ($N = 943$). While a group randomized trial would have been ideal, random assignment to D.A.R.E. is problematic due to the very nature of the D.A.R.E. structure. While often seen as a monolithic organization, D.A.R.E. is a manifestation of community policing. Only local police and local schools can decide to teach D.A.R.E. and this partnership is central to the D.A.R.E. system. D.A.R.E. America provides a national curriculum and sets the training standards for new and continuing officers. As a result, without a large budget to support incentives, a matched group design was determined to be the most efficient design for this preliminary study.

3.2. Procedures

Five treatment condition schools were recruited among those teaching D.A.R.E.'s EkiR in spring 2014 by a police department in the southwestern United States. After school district approval, principals and teachers were recruited from 13 sixth grade classrooms. The total number of students in the treatment condition was 359 (male = 163) (female = 196). Three D.A.R.E. officers from the participating police department also consented to participate.

Control schools were recruited by matching SES, geographic proximity to the treatment schools, and not having access to any officer-led prevention curricula. District prevention activities for the control schools during the study period were limited to hosting a red ribbon week. Again, after school district and principals' approval, 13 sixth grade classrooms agreed to participate as control schools. The number of students in the control condition was 584 (male = 302) (female = 282).

Teachers provided parents with study information sheets, contact information for research staff, and a request for consent for their child's participation. If parents wished for their child to opt out of participation, they were instructed to contact research staff. If a parent did not opt their child out of participation, then the student was given the option to assent. Two students were opted out of the project by their parents, one in the treatment group and one in the control group, and they were provided alternative activities. All remaining students assented.

Unique student identification codes were assigned and the list linking student codes to students was secured by the study team and destroyed at the end of the study. Teachers in both conditions directed their students to the study website, provided the students with a tear off sheet that had the student's name and unique identification number, and had the students enter the code into the survey. The tear sheets with student names were then destroyed.

Students in both conditions completed identical pre-test and post-test online surveys in school computer labs under the direction of their

teachers. Research staff cleaned data entry errors involving student identification codes by referring to class rosters. All participants who completed both the pre-survey and post-survey were included in data analysis.

3.3. Intervention

D.A.R.E.'s The Elementary keepin' it REAL (EkiR) consists of ten 45-min lessons teaching the five core SEL skills: self-awareness and management, decision-making, understanding and helping others, relationship and communication skills, and handling responsibilities. Each lesson begins with a summary of the previous lesson with transition to an animated video presenting a narrative about a challenging situation in which the lesson topic is addressed (e.g., managing emotions). The officer then leads a discussion resulting in the definition of a skill followed by application of concepts and skills to problem situations in their student workbook. Application is followed by small group/dyadic/or individual skill practice, with a concluding summary discussion, assignment of homework for further application and practice, and a concluding live action video summarizing core ideas from the lesson and introducing the topic for the next lesson. The homework becomes the basis for the next lesson's summary. To further reinforce the lesson material, there is also a comic book titled REAL Adventures depicting the challenging situations and resolutions from the lessons.

3.4. Measures

Demographic risk variables included gender (female = 0, male = 1), whether or not the student received free lunches or breakfasts at school (a proxy measure of social class, no = 0, yes = 1), and self-reported grades as a measure of academic achievement (higher values reflect higher grades in academic subjects). Race and ethnicity were not available variables for this analysis due to concern about this variable at the school district level.

3.4.1. Definitional knowledge

Definitional knowledge of the following concepts was assessed: evaluating your own decisions, confident communication, interpersonal resistance, and empathy. For each concept, a definition was provided and respondents were asked to choose the appropriate concept from three choices. The items were scored so that 1 reflects a correct answer and 0 reflects an incorrect one.

3.4.2. Social and emotional learning competencies

Drawing from CASEL's social and emotional learning domains (CASEL, 2015), a number of competencies were measured. The larger domains included: responsible decision making, self-management, social awareness, and relationship skills.

3.4.2.1. Decision-making skills. Decision-making skills were measured with two scales, decision-making knowledge and decision-making skills and application. The decision-making knowledge scale (Mincemoyer & Perkins, 2003) consisted of eleven items assessing how respondents define and evaluate problems. Students responded to the items on a 3-point scale (1 = almost never, 2 = sometimes, 3 = almost always). Cronbach's alpha was 0.74. The decision-making skills and application scale consisted of five items assessing how students would respond to a scenario where an older cousin acting as babysitter invites friends over without permission. The measure was created for this study based on the skills taught in the program. Students responded to the items such as "How likely is it that you would stop and define the problem facing you?" on a 4-point scale (1 = Not at all likely, 2 = Unlikely, 3 = Likely, 4 = Very likely). This scale was selected because it aligns specifically with the problem-focused method of decision-making taught in the EkiR lessons. Cronbach's alpha was 0.76.

3.4.2.2. Self-management. Two aspects of self-management were assessed, refusal confidence and self-control. Refusal confidence was measured by assessing their ability to apply the four strategies identified in previous research: refuse, explain, avoid, and leave (Colby et al., 2013; Miller, Alberts, Hecht, Krizek, & Trost, 2000). Students were presented with a scenario and asked how confident they were that they could use each skill. Since the internal consistency of this scale was not optimal for this study population ($\alpha = 0.60$), the four items were examined individually. Self-control was measured by a six-item subscale of the Assessment of Liability and Exposure to Substance Use and Antisocial Behavior for children scale (Ridenour, 2003; Ridenour, Clark, & Cottler, 2009). Participants responded on a 3-point scale (1 = almost never, 2 = sometimes, 3 = almost always). Cronbach's alpha was 0.77.

3.4.2.3. Relationship skills. Two relationship skills were assessed, communication skills and susceptibility to peer pressure. Communication skills were assessed by 4 single items developed specifically for this study to assess four different communication skills promoted in the curriculum. The items mirrored those developed by Parker and Asher (1993). Participants responded on a 3-point scale (1 = almost never, 2 = sometimes, 3 = almost always). Susceptibility to peer pressure was measured by two separate items extracted from the Assessment of Liability and Exposure to Substance Use and Antisocial Behavior for Children scale (Ridenour, 2003; Ridenour et al., 2009). Responses were on a 3-point scale of (1 = not okay, 2 = okay, 3 = definitely okay). These two items were analyzed separately.

3.4.3. Intent to smoke

Intent to smoke tobacco was assessed since intent is a strong predictor of smoking behavior (Tucker, Ellickson, & Klein, 2002) and smoking itself is one of the stronger predictors for future use of other substances for elementary age youth (Torabi, Bailey, & Majd-Jabbari, 1993). This was measured with a single item from Ridenour (2003). Participants were asked "Would you like to try smoking tobacco some day?" and responded on a 3-point scale (1 = yes, 2 = maybe, 3 = no).

3.4.4. Attitudes toward police

Attitudes toward police were measured by four items from the Perceptions of Police scale (Brandt & Markus, 2000). Participants responded on a 3-point scale of (1 = not true, 2 = sort of true, 3 = very true). All items were coded so that higher scores reflect more favorable attitudes toward police. Cronbach's alpha was 0.51. Since the internal consistency of this scale was poor for this study population, the four items were examined individually.

3.5. Analysis plan

Analyses presented below include pretest comparisons of treatment and control groups, attrition analyses, and hierarchical logistic and linear regressions to test the study hypotheses. The nonrandom design required comparisons of pretest differences between conditions before moving on to the main analyses

4. Results

4.1. Pretest comparisons of treatment and control groups

Pretest differences between treatment and control groups were examined. Only statistically significant pretest differences are reported here. The treatment group students reported more knowledge or skill for the following: defining evaluation of your own decisions, defining confident communication, favorable skills in applying effective decision-making strategies, self-control, the communication skills of maintaining eye contact and examining body language, and the ability to explain why they would refuse an offer of a cigarette. The treatment

group was also significantly more likely to report that officers are usually friendly.

Pretest differences may indicate that the treatment group was on a more prosocial trajectory prior to exposure to the D.A.R.E. curriculum. These pretest differences were controlled statistically in the final analyses by including pretest measures in the regression equations as control variables.

4.2. Attrition

Possible attrition bias was assessed by examining predictor variables for the entire sample. We observed significant differences between stayers and leavers on the measures for socio-economic status (the free meals at school item) and academic achievement (self-reported grades). Leavers, but only those in the control condition, were more likely to report receiving free lunch or breakfast at school and to report lower grades. The overall conclusion is that attrition was not a significant threat to validity. If there is attrition bias, in this situation, it would bias results toward the null hypothesis.

4.3. Intervention effects

The effects of the D.A.R.E. program were assessed with a series of hierarchical logistic and linear regressions with the treatment variable examined after the effects of gender, SES (measured as participation in the free lunch or breakfast program), academic achievement (measured as self-reported grades) and the time one measures of dependent variables had been accounted for in a prior step.

4.3.1. Effects on knowledge

Table 1 presents hierarchical logistic regression results for

Table 1
Hierarchical logistic regression of time 2 D.A.R.E. definitional knowledge items on treatment.

Dependent variable	Independent variable	Model 1			Model 2		
		B	Wald χ^2	Odds ratio	B	Wald χ^2	Odds ratio
Evaluation of decisions Time 2	Gender	0.00	0.00	1.00	0.04	0.04	1.04
	Free lunch program	- 0.02	0.01	0.98	- 0.01	0.00	0.99
	Grades	0.32*	5.87	1.37	0.37**	7.62	1.45
	Evaluation, time 1	1.01***	31.31	2.73	0.94***	26.37	2.55
	D.A.R.E. program				0.75***	14.68	2.11
	χ^2/df for variable block		40.08/4***			15.42/1***	
	Nagelkerke R ²		0.08			0.11	
Confident communication, Time 2	Gender	- 0.50	2.52	0.61	- 0.45	2.01	0.64
	Free lunch program	- 0.11	0.05	0.90	- 0.14	0.08	0.87
	Grades	0.56**	9.28	1.75	0.60***	10.28	1.82
	Confident comm, time 1	2.24***	51.37	9.41	2.22***	49.50	9.19
	D.A.R.E. Program				0.69*	4.23	1.99
	χ^2/df for variable block		62.38/4***			4.52/1*	
	Nagelkerke R ²		0.20			0.21	
Interpersonal resistance Time 2	Gender	- 1.14**	9.60	0.32	- 1.07**	8.29	0.34
	Free lunch program	- 0.74	2.32	0.48	- 0.76	2.38	0.47
	Grades	0.06	0.08	1.06	0.09	0.19	1.09
	Interpers. res., time 1	1.90***	28.31	6.66	1.93***	28.44	6.90
	D.A.R.E. program				0.76*	4.19	2.15
	χ^2/df for variable block		39.88/4***			4.59/1*	
	Nagelkerke R ²		0.15			0.16	
Empathy Time 2	Gender	- 0.29	2.94	0.75	- 0.25	2.24	0.78
	Free lunch program	- 0.11	0.15	0.90	- 0.11	0.15	0.90
	Grades	0.11	0.87	1.12	0.17	1.89	1.19
	Empathy, time 1	1.27	58.70	3.56	1.23***	53.09	3.41
	D.A.R.E. program				0.81***	20.37	2.25
	χ^2/df for variable block		65.83/4***			21.19/1***	
	Nagelkerke R ²		0.12			0.16	

* $p \leq 0.05$.
 ** $p \leq 0.01$.
 *** $p \leq 0.001$.

Table 2
Hierarchical regression of SEL competency measures on treatment: decision-making knowledge and decision-making skills and application.

Dependent variable	Independent variable	Model 1		Model 2	
		b	β	b	β
Decision-making knowledge Time 2	Gender	- 0.02	- 0.03	- 0.02	- 0.03
	Free lunch program	0.02	0.01	0.02	0.02
	Grades	0.04*	0.08	0.05**	0.09
	Decision knowledge, time 1	0.60***	0.53	0.59***	0.52
	D.A.R.E. program			0.07**	0.10
R ²		0.31		0.32	
F for change in R ²		77.72***		9.82**	
Decision-making skills and application, time 2	Gender	- 0.03	- 0.03	- 0.03	- 0.02
	Free lunch program	0.02	0.01	0.02	0.01
	Grades	0.09***	0.11	0.10***	0.12
	Decision skills, time 1	0.58***	0.52	0.57***	0.51
	D.A.R.E. program			0.10**	0.10
R ²		0.30		0.31	
F for change in R ²		74.81***		8.02**	

* $p \leq 0.05$.
 ** $p \leq 0.01$.
 *** $p \leq 0.001$.

knowledge of concepts presented in the curriculum. For all four concepts, students in the D.A.R.E. treatment group increased their knowledge significantly more than did control students after controlling for pretest knowledge. These findings suggest that students are

Table 3
Hierarchical regression of SEL self-management measures on treatment: confidence in refusal skills and self-control over anti-social behavior.

Dependent variable	Independent variable	Model 1		Model 2	
		b	β	b	β
Refusal skills: refuse Time 2	Gender	-0.04*	-0.06	-0.04	-0.06
	Free lunch program	-0.01	-0.01	-0.01	-0.01
	Grades	0.03	0.06	0.03	0.06
	Refuse, time 1	0.31***	0.33	0.31***	0.33
	D.A.R.E. Program			-0.02	-0.02
R ²		0.12	0.13		
F for change in R ²		25.32***	0.37		
Refusal skills: explain, Time 2	Gender	-0.06	-0.04	-0.05	-0.03
	Free lunch program	0.05	0.02	0.05	0.02
	Grades	0.01	0.01	0.02	0.02
	Explain, time 1	0.35***	0.34	0.34***	0.33
	D.A.R.E. Program			0.16***	-0.02
R ²		0.12	0.13		
F for change in R ²		23.25***	11.08***		
Refusal skills: avoid Time 2	Gender	-0.01	-0.01	-0.01	-0.01
	Free Lunch Program	0.04	0.02	0.04	0.02
	Grades	0.08**	0.12	0.08**	0.12
	Avoid, Time 1	0.29***	0.20	0.23***	0.20
	D.A.R.E. Program			0.01	0.01
R ²		0.06	0.06		
F for change in R ²		10.28***	0.11		
Refusal skills: leave, Time 2	Gender	0.02	0.03	0.03	0.03
	Free Lunch Program	0.01	0.01	0.02	0.01
	Grades	0.07**	0.12	0.08**	0.12
	Leave, Time 1	0.17***	0.19	0.17***	0.19
	D.A.R.E. Program			0.04	0.04
R ²		0.05	0.05		
F for change in R ²		9.05***	1.26		
Self-control Time 2	Gender	-0.06	-0.08	-0.06	-0.09
	Free lunch program	0.01	0.01	0.01	0.01
	Grades	0.05	0.09	0.05	0.09
	Self-control, time 1	0.66	0.64	0.66	0.64
	D.A.R.E. program			0.01	0.01
R ²		0.47	0.47		
F for change in R ²		156.80***	0.17		

* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.001$.

understanding and retaining, at least in the short term, the content of D.A.R.E. lessons.

4.3.2. Effects on SEL competencies

Results for analyses of SEL competencies are presented in Tables 2, 3, and 4. In Table 2, analyses of decision-making scales showed significant effects in the predicted direction for both measures. Controlling for pretest differences, students in the D.A.R.E. condition reported significantly greater decision-making knowledge and reported a significantly greater likelihood of applying decision-making skills.

Table 3 presents results for the SEL domain of self-management (refusal confidence and self-control). Controlling for the pre-test differences, D.A.R.E. students were significantly more confident that they could offer an explanation for not accepting an offer of a cigarette, the most common strategy used by youth in previous research (Miller et al., 2000). There were no significant differences observed in their confidence to use the other strategies and no effects on self-control.

Table 4 presents results for the relationship skills domain, The D.A.R.E. curriculum showed significant positive effects on two of the

Table 4
Hierarchical regression of SEL measures on treatment: communication skills and susceptibility to peer pressure..

Dependent variable	Independent variable	Model 1		Model 2	
		b	β	b	β
Communication skills: eye contact Time 2	Gender	-0.09**	-0.08	-0.08**	-0.07
	Free lunch program	-0.05	-0.02	-0.05	-0.02
	Grades	0.03	0.04	0.04	0.05
	Eye contact, time 1	0.41***	0.41	0.40***	0.41
	D.A.R.E. program			0.13**	0.11
R ²		0.18	0.19		
F for change in R ²		39.50***	0.17**		
Communication skills: body language Time 2	Gender	-0.10*	-0.07	-0.08	-0.06
	Free Lunch Program	-0.02	-0.01	-0.01	-0.01
	Grades	0.03	0.04	0.05	0.05
	Body language, time 1	0.35***	0.36	0.33***	0.34
	D.A.R.E. program			0.23***	0.17
R ²		0.14	0.16		
F for change in R ²		28.03***	23.5***		
Communication skills: perspective taking Time 2	Gender	-0.10**	-0.08	-0.10**	-0.08
	Free lunch program	0.02	0.01	0.02	0.01
	Grades	-0.04	-0.04	-0.03	-0.03
	Perspective taking, time 1	0.32***	0.34	0.31***	0.33
	D.A.R.E. Program			0.09	0.07
R ²		0.13	0.13		
F for change in R ²		26.42***	3.83		
Communication skills: assertiveness Time 2	Gender	-0.02	-0.01	-0.01	-0.01
	Free lunch program	-0.10	-0.05	-0.10	-0.05
	Grades	0.00	0.00	0.00	0.00
	Assertiveness, time 1	0.33***	0.32	0.32***	0.32
	D.A.R.E. program			0.07	0.05
R ²		0.11	0.11		
F for change in R ²		21.08***	2.22		
Peer pressure: movie instead of study Time 2	Gender	-0.04	-0.04	-0.04	-0.03
	Free lunch program	0.02	0.01	0.02	0.01
	Grades	0.07**	0.09	0.08**	0.11
	Movie, time 1	0.48***	0.48	0.47***	0.47
	D.A.R.E. Program			0.10**	0.10
R ²		0.26	0.27		
F for change in R ²		63.03***	9.35**		
Peer pressure: accept cigarette Time 2	Gender	-0.01	-0.03	-0.01	-0.03
	Free lunch program	0.03	0.05	0.03	0.05
	Grades	0.02	0.07	0.02	0.07
	Accept cigarette, time 1	0.27***	0.20	0.27***	0.20
	D.A.R.E. program			0.01	0.03
R ²		0.05	0.05		
F for change in R ²		9.03***	0.67		

* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.001$.

four measures of communication skill (use of eye contact and assessment of the other's body language). No significant effects were observed for the perspective taking or assertiveness measures. There is some evidence that the program improved resistance to peer pressure.

Table 5
Hierarchical Regression of Intent to Smoke and Attitudes toward Police on Treatment.

Dependent variable	Independent variable	Model 1		Model 2	
		b	β	b	β
Intent to smoke cigarettes Time 2	Gender	− 0.01	− 0.02	− 0.01	− 0.02
	Free lunch program	0.01	0.01	0.01	0.01
	Grades	0.05***	0.13	0.05***	0.13
	Intent to Smoke, Time 1	0.73***	0.48	0.73***	0.47
	D.A.R.E. Program			0.03	0.06
R ²		0.26		0.26	
F for change in R ²		63.12***		3.47	
Would ask police for help Time 2	Gender	− 0.06	− 0.05	− 0.06	− 0.05
	Free lunch program	− 0.18*	− 0.09	− 0.18*	− 0.09
	Grades	0.03	0.04	0.03	0.04
	Ask police for help, time 1	0.43***	0.44	0.43***	0.44
	D.A.R.E. program			0.02	0.02
R ²		0.21		0.21	
F for change in R ²		47.44***		0.33	
Would cross street to avoid police Time 2 (reverse coded)	Gender	− 0.01	− 0.01	− 0.01	− 0.01
	Free Lunch Program	0.11	0.06	0.11	0.06
	Grades	0.07*	0.08	0.06*	0.08
	Avoid Police, Time 1	0.46***	0.43	0.46***	0.43
	D.A.R.E. Program			0.06	0.05
R ²		0.19		0.19	
F for change in R ²		42.03***		2.14	
Police are friendly Time 2	Gender	− 0.10*	− 0.09	− 0.10*	− 0.08
	Free Lunch Program	− 0.02	− 0.01	− 0.02	− 0.01
	Grades	0.01	0.01	0.02	0.02
	Police Are Friendly, Time 1	0.50***	0.49	0.49***	0.49
	D.A.R.E. Program			0.07	0.06
R ²		0.26		0.26	
F for change in R ²		62.01***		3.00	
Police help people Time 2	Gender	− 0.05*	− 0.07	− 0.05	− 0.07
	Free lunch program	0.01	0.01	0.01	0.01
	Grades	0.05*	0.09	0.05**	0.10
	Police help people, time 1	0.36***	0.35	0.36***	0.35
	D.A.R.E. program			0.08**	0.10
R ²		0.14		0.15	
F for change in R ²		29.80***		8.88**	

* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.001$.

Treatment students were significantly more likely to resist the pressure to attend a movie instead of studying. However, there was no difference between groups in willingness to accept a cigarette. This may be due to the fact that almost none of the students smoked, making offers infrequent and resistance unnecessary.

4.3.3. Effects on intent to smoke and attitudes toward police

Table 5 indicates the intervention did not significantly affect intent to smoke ($p = 0.08$). Again, there was little variation to explain. Of the 761 valid responses to the item, only 9 students reported that they wanted to try smoking, 23 reported maybe, and 729 reported no.

Regarding attitudes toward police, Table 5 shows that significantly more students in the treatment group report that police would help people in need. There were no significant differences for the other three items. The overall results is consistent with previous studies of perceptions of police delivering prevention programs, which show that early adolescents tend to have relatively stable and favorable views of

police compared with older cohorts (Stewart, Morris, & Weir, 2014).

5. Conclusions

This study provides a preliminary and short-term evaluation of D.A.R.E.'s EkiR, a program based on social and emotional learning theoretical principles. A quasi-experimental matched group design in which matched D.A.R.E. and non-D.A.R.E. schools are compared provides a less rigorous test than a randomized controlled design, but also approximates real-world conditions associated with implementation of the D.A.R.E. program. Given the important reach of this program and the need for an evaluation, the current study provides some promising findings.

EkiR had clear and positive effects on the knowledge and application of many of the targeted basic social emotional learning skills (e.g., responsible decision making, self-monitoring, and relationship skills). Statistically significant effects demonstrate that treatment students reported a greater likelihood of resisting peer pressure on some measures, and reported more confidence in being able to explain why they would refuse offers of cigarettes. D.A.R.E. students also scored higher on measures of knowledge of concepts directly related to the curriculum, demonstrating that lesson content is being learned and retained.

On the other hand, a number of non-significant effects were observed. For resistance, no effects were found for avoiding offers and leaving when offered. Avoiding tends to be a more sophisticated communication strategy found more frequently among older youth (Hecht, Alberts, & Miller-Rassulo, 1992) while leaving is difficult for younger children who have less mobility control. It may also be that there were no differences in resistance to smoking offers due to their infrequency. Finally, and probably most troubling, was the lack of effects on self-control and assertiveness. Self-control, in particular, is a central SEL competency for this age group (Rimm-Kaufman & Hulleman, 2015) and D.A.R.E. may need to provide greater stress on this concept in future training. On the other hand, as both skills are found to emerge as youth age, future longitudinal studies may capture these effects.

A number of significant limitations are acknowledged. Only self-report data are examined and there were a number of measures with moderate to low reliability which may have contributed to some of the non-significant findings. Social norms, which are often key to long term effects, and actual substance use could not be examined due to ceiling effects (almost all had negative norms and very few reported smoking). Finally, students represented a limited demographic (e.g., SES, geography) reducing our ability to generalize. The curriculum is intended for elementary school youth and should have similar effects on 5th grade students. Yet, due to potential developmental differences, it is unclear if the curriculum will have similar effects on 6th grade students in middle school settings.

Overall, the results of this study suggest that interest in using substances can be affected in elementary students using a social and emotional competence enhancement approach and show promise for the effectiveness of the D.A.R.E. elementary school curriculum (EkiR). While further evaluation of the program across a range of conditions and types of students is warranted, the current analyses provide outcomes comparable to those obtained by some programs listed on websites such as NREPP and other successful SEL programs (Durlak et al., 2015). As predicted by SEL theory, improved social and emotional competencies become important child assets with positive consequences for development and long-term outcomes such as substance use (Rimm-Kaufman & Hulleman, 2015).

Role of funding sources

Funding for this research was provided by D.A.R.E. America. D.A.R.E. America had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication.

Contributors

All authors participated in the study design and preparation of the manuscript. Miller-Day and Day developed the survey instrument. Fehmie directed data collection and served as the primary contact person for study participants. Day conducted the analysis. All authors approve of the final manuscript.

Conflict of interest

Three of the authors have a financial conflict of interest. Miller-Day and Hecht developed the curriculum and own the intellectual property through their company, Real Prevention LLC. The curriculum is licensed to D.A.R.E. America by Real Prevention. Both Drs. Miller-Day and Hecht benefit financially from the arrangement. Dr. Day benefits financially through marriage. D.A.R.E. America funded this study through a contract granted to the Earl Babbie Research Center at Chapman University.

References

- Belfield, C., Bowden, B., Klapp, A., Levin, H., Shand, R., & Zander, S. (2015). *The Economic Value of Social and Emotional Learning*. New York: Center for Benefit-Cost Studies in Education.
- Brandt, D. E., & Markus, K. A. (2000). Adolescent attitudes toward the police: A new generation. *Journal of Police and Criminal Psychology, 15*(1), 10–16.
- CASEL (2015). *CASEL guide: Effective social and emotional learning programs*. Chicago, IL: Collaborative for Academic, Social, and Emotional Learning.
- Colby, M., Hecht, M. L., Miller-Day, M., Krieger, J. R., Syversten, A. K., Graham, J. W., & Pettigrew, J. (2013). Adapting school-based substance use prevention curriculum through cultural grounding: An exemplar of adaptation processes for rural schools. *American Journal of Community Psychology, 51*, 190–205. <http://dx.doi.org/10.1007/s10464-012-9524-8>.
- Domitrovich, C. E., Durlak, J. A., Staley, K. C., & Weissberg, R. P. (2017). Social-emotional competence: An essential factor for promoting positive adjustment and reducing risk in school children. *Child Development, 88*(2), 408–416.
- Donovan, J. E. (2014). The burden of alcohol use: Focus on children and preadolescents. *Alcohol Research: Current Reviews, 35*(2), 186.
- Durlak, J. A., Domitrovich, C. E., Weissberg, R. P., & Gullotta, T. P. (Eds.). (2015). *Handbook of social and emotional learning*. NY: Guilford Press.
- Ennett, S. T., Ringwalt, C. L., Thorne, J., Rohrbach, L. A., Vincus, A., Simons-Rudolph, A., & Jones, S. (2003). A comparison of current practice in school-based substance use prevention programs with meta-analysis findings. *Prevention Science, 4*(1), 1–14.
- Ennett, S. T., Tobler, N. S., Ringwalt, C. L., & Flewelling, R. L. (1994). How effective is drug abuse resistance education? A meta-analysis of project DARE outcome evaluations. *American Journal of Public Health, 84*(9), 1394–1401.
- Hecht, M. L., Alberts, J. K., & Miller-Rassulo, M. (1992). Resistance to drug offers among college students. *International Journal of the Addictions, 27*, 995–1017.
- Hecht, M. L., Graham, J. W., & Elek, E. (2006). The Drug Resistance Strategies intervention: Program effects on substance use. *Health Communication, 20*, 267–276 (PMID17137418).
- Hecht, M. L., & Krieger, J. K. (2006). The principle of cultural grounding in school-based substance use prevention: The drug resistance strategies project. *Journal of Language and Social Psychology, 25*, 301–319. <http://dx.doi.org/10.1177/0261927X06289476>.
- Jackson, K. M., Barnett, N. P., Colby, S. M., & Rogers, M. L. (2015). The prospective association between sipping alcohol by the sixth grade and later substance use. *Journal of Studies on Alcohol and Drugs, 76*(2), 212–221.
- Miech, R. A., Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2015). *Monitoring the future national survey results on drug use, 1975–2014: Volume I, secondary school students*. Ann Arbor: Institute for Social Research, The University of Michigan.
- Miller, M., Alberts, J. K., Hecht, M. L., Trost, M., & Krizek, R. L. (2000). *Adolescent relationships and drug use*. Mahway, NJ: Lawrence Erlbaum Associates Publishing.
- Miller-Day, M., & Hecht, M. L. (2013). Narrative means to preventative ends: A narrative engagement framework for designing prevention interventions. *Health Communication, 28*, 657–670. <http://dx.doi.org/10.1080/10410236.2012.762861>.
- Mincemoyer, C. C., & Perkins, D. F. (2003). Assessing decision-making skills of youth. *The Forum for Family and Consumer Issues, 8*(1), 1–9.
- Parker, J. G., & Asher, S. R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology, 29*, 611–621.
- Pettigrew, J., Graham, J. W., Miller-Day, M., Hecht, M. L., Krieger, J. L., & Shin, Y. (2015). Adherence and delivery quality: Implementation quality and outcomes of 7th grade keepin' it REAL program. *Prevention Science, 16*(1), 90–99. <http://dx.doi.org/10.1007/s11121-014-0459-1>.
- Reid, J. B., Eddy, J. M., Fetrow, R. A., & Stoolmiller, M. (1999). Description and immediate impacts of a preventive intervention for conduct problems. *American Journal of Community Psychology, 27*(4), 483–518.
- Ridenour, T. A. (2003). *Assessment of liability and exposure to substance use and antisocial behavior* (ALEXSA®), CORE measures. PA: Allison Park.
- Ridenour, T. A., Clark, D. B., & Cottler, L. B. (2009). The illustration-based assessment of liability and exposure to substance use and antisocial behavior® for children. *The American Journal of Drug and Alcohol Abuse, 35*(4), 242–252.
- Rimm-Kaufman, S., & Hulleman, C. (2015). SEL in elementary school settings: Identifying mechanisms that matter. In J. A. Durlak, C. E. Domitrovich, R. P. Weissberg, & T. P. Gullotta (Eds.), *Handbook of social and emotional learning* (pp. 151–166). NY: Guilford Press.
- Stewart, D. M., Morris, R. G., & Weir, H. (2014). Youth perceptions of the police: Identifying trajectories. *Youth Violence and Juvenile Justice, 12*(1), 22–39. <http://dx.doi.org/10.1177/1541204013480369>.
- Tobler, N. S., Roona, M. R., Ochshorn, P., Marshall, D. G., Streke, A. V., & Stackpole, K. M. (2000). School-based adolescent drug prevention programs: 1998 meta-analysis. *Journal of Primary Prevention, 20*(4), 275–336.
- Torabi, M. R., Bailey, W. J., & Majd-Jabbari, M. (1993). Cigarette smoking as a predictor of alcohol and other drug use by children and adolescents: Evidence of the “gateway drug effect”. *Journal of School Health, 63*(7), 302–306.
- Tucker, J., Ellickson, P., & Klein, D. (2002). Smoking cessation during the transition from adolescence to young adulthood. *Nicotine & Tobacco Research, 4*(3), 321–332.
- US General Accounting Office (2003). *Youth illicit drug use prevention: DARE long-term evaluations and federal efforts to identify effective programs*. GAO-03-172R Washington, DC: US General Accounting Office. <http://www.gao.gov/new.items/d03172r.pdf>.
- Zinsker, K. M., Weissberg, R. P., & Dusenbury, L. (2013). *Aligning preschool through high school social and emotional learning standards: A critical and doable next step*. Chicago: Collaborative for Academic, Social, and Emotional Learning.