

**SAMPLING OF SCIENTIFIC STUDIES OF THE “keepin’ it REAL” PROGRAM**  
**Chronological 2003-2017**

**Hecht, M. L., Marsiglia, F. F., Elek-Fisk, E., Wagstaff, D. A, Kulis, S., Dustman, P., & Miller-Day, M. (2003). Culturally-grounded substance use prevention: An evaluation of the keepin’ it R.E.A.L. curriculum. *Prevention Science*, 4, 233-248.**

This paper reports on the evaluation of a culturally grounded prevention intervention targeting substance use among urban middle-school students. The curriculum consists of 10 lessons promoting antidrug norms and teaching resistance and other social skills, reinforced by booster activities and a media campaign. Three versions were delivered: Mexican American, combined African American and European American, and Multicultural. Thirty-five middle schools were randomly assigned to 1 of the 3 versions or the control. Students completed baseline and follow-up questionnaires over a 2-year period (total 6,035 respondents). Analyses utilizing a generalized estimating equations approach assessed the overall effectiveness of cultural grounding and the cultural matching hypothesis. Support was found for the intervention’s overall effectiveness, with statistically significant effects on gateway drug use as well as norms, attitudes, and resistance strategies but with little support for the cultural matching hypothesis. Specific contrasts found the Mexican American and Multicultural versions impacted the most outcomes.

On the basis of analyses, the intervention provided promising results with substantial and significant effects on personal and descriptive norms, expectations of substance use, use of resistance strategies, and use of the gateway drugs: alcohol, cigarettes, and marijuana. (p. 244)

In some instances, the curriculum helped students maintain pre-existing, anti-alcohol, tobacco, and other drug (ATOD) attitudes and norms; at a minimum, it restricted their transition to greater levels of substance use and toward more prodrug attitudes and norms. (p. 244)

Multicultural curricula such as the one proving effective in this study include cultural elements from a variety of cultures and this allows most students to perceive elements of their own culture in the program. (p. 245)

**Gosin, M., Marsiglia, F. F., & Hecht, M. L. (2003). keepin'it REAL: A drug resistance curriculum tailored to the strengths and needs of pre-adolescents of the southwest. *Journal of Drug Education*, 33(2), 119-142.**

...cultural grounding through the infusion of cultural elements and values appears to result in effective drug prevention. In an integrated school system where Mexican American make up the numerical majority of students, the evaluation found that a curriculum tailored to Mexican American culture (Mexican American version) or reflective of Mexican American culture (Multicultural version) reduced use and beneficially impacted a number of other substance use related psychosocial variables(p.133)

**Kulis, S., Marsiglia, F. F., Elek, E., Dustman, P., Wagstaff, D. A., & Hecht, M. L. (2005). Mexican/Mexican American adolescents and keepin'it REAL: An evidence-based substance use prevention program. *Children & Schools, 27*(3), 133-145.**

3,402 Mexican heritage students in 35 Arizona middle schools (including 11 control sites); at baseline the mean age was 12.52 years ( $SD=.64$  years)

In one instance -- drug refusal confidence -- the program appeared to strengthen resilience against drug use, rather than merely retard its erosion. (p. 10)

Compared with students in the control schools, the students who participated in the *keepin' it REAL* reported beneficial effects on recent alcohol and marijuana use, future intentions to accept substance offers, confidence to refuse substance offers, and more realistic perceptions of peer substance use. (p. 10)

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...participation in this program retarded the students' transitions to elevated levels of substance use and their adoption of pro-drug attitudes and norms. (p. 10)

Results were less clear, however, regarding the importance of strict cultural matching of program content with student ethnicity. On the one hand, all of the significant program effects were confined to the Latino and multicultural versions of the curriculum that specifically targeted Mexican American cultural orientations...On the other hand, no statistically significant differences emerged in direct contrasts of the effectiveness of the Latino and multicultural curriculums compared with the non-Latino version. (p. 10)

**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**

This study evaluates the keepin' it REAL program, a culturally grounded, communication-based, substance use prevention program implemented in 35 middle schools in Phoenix, Arizona. The intervention consisted of 10 lessons taught by the classroom teacher that imparted the knowledge, motivation, and skills needed to resist drug offers. The evaluation used growth modeling to analyze significant differences in average post intervention substance use (alcohol, cigarettes, and marijuana) and growth of use over the course of the study. The study involved 6,298 seventh graders (65% Mexican/Mexican American) who responded to at least 1 of 4 questionnaires (1 pretest and 3 follow-up measures). When compared to a control group, the DRS intervention appeared to significantly limit the increase in the number of students reporting recent substance use, especially alcohol and marijuana use. The multicultural version of the curriculum proved most broadly effective, followed by the version targeting Mexican American youth. The development of a culturally grounded prevention curriculum for Mexican American youth

expands the population being served by interventions. Moreover, the success of the multicultural curriculum version, which has the broadest application, provides particular promise, and the article demonstrates how a growth modeling approach can be used to evaluate a communication-based intervention by analyzing changes over time rather than differences between the pretest and posttest scores.

The *keepin' it REAL* DRS [Drug Resistance Strategies] project curriculum successfully limits increases in alcohol and marijuana use. (p. 275)

This study focused on the use of novel statistical models. As such, one of the primary measures of this study was the overall effectiveness of the project over time and did not “tease out” any one particular component (e.g., decision making skills, relationship skills, etc.) contributing to its efficacy.

The results of this study support the conclusion that the DRS [Drug Resistance Strategies] intervention slows the naturally occurring developmental increased in students’ reported substance use. (p. 274)

Overall, the multicultural version (targeting both Mexican American and non-Mexican American youth) appeared to be the most broadly effective, having impacts on both alcohol and marijuana; the version that targets Mexican American youth appears to be [effective] with alcohol use. (p. 275).

**Warren, J. R., Hecht, M. L., Wagstaff, D. A., Elek, E., Ndiaye, K., Dustman, P., & Marsiglia, F. F. (2006). Communicating prevention: The effects of the keepin’it REAL classroom videotapes and televised PSAs on middle-school students’ substance use. *Journal of Applied Communication Research*, 34(2), 209-227.**

This study sought to determine if exposure to keepin’ it REAL program videotapes account for changes in substance use among adolescents participating in the Drug Resistance Strategies Project’s keepin’ it REAL adolescent substance use prevention curriculum. Middle-school students (4,734, 72% Latino) responded to questionnaires related to these analyses. An analysis of covariance (ANCOVA) model was fit separately to six substance use outcomes. The results suggested that intervention students who saw four or five videos engaged in less substance use in the past month than did students who saw fewer videos. Having seen the PSAs one or more times did not predict the reported change in substance use.

**Kulis, S., Nieri, T. Yabiku, S., Stromwall, L.K., & Marsiglia, F.F. (2007). Promoting reduced and discontinued substance use among adolescent substance users: Effectiveness of a universal prevention program. *Prevention Science*, 37, 123-144.**

Using a sample from 35 middle schools of 1,364 youth who reported using substances, this study examined the effectiveness of a universal youth substance use prevention program, the SAMHSA

Model Program keepin' it REAL, in promoting reduced or recently discontinued alcohol, cigarette, and marijuana use. Discrete-time event history methods modeled the rates of reduced and recently discontinued use across four waves of data. Each substance (alcohol, cigarettes, and marijuana) was modeled separately. Beginning at the second wave, participants who reported use at wave 1 were considered at risk of reducing or discontinuing use. Since the data sampled students in schools, multi-level models accounted for the nesting of data at the school level. Results indicated that prevention program participation influenced the rates of reduced and recently discontinued use only for alcohol, controlling for baseline use severity, age, grades, socioeconomic status, ethnicity and gender. Among youth who reported use of alcohol in wave 1 (N= 1,028), the rate of reducing use for program participants was 72% higher than the rate for control students. The rate of discontinuing use was 66% higher than the rate for control students. Among youth who reported use of one or more of the three substances in wave 1 (N = 1,364), the rate of discontinuing all use was 61% higher for program participants than for control students.

**Kulis, S., Yabiku, S. T., Marsiglia, F. F., Nieri, T., & Crossman, A. (2007). Differences by gender, ethnicity, and acculturation in the efficacy of the keepin'it REAL model prevention program. *Journal of drug education, 37*(2), 123-144.**

Data came from a randomized trial in 35 Phoenix, Arizona middle schools involving 4,622 mostly Latino 7th graders

This study examined whether the efficacy of keepin' it REAL, a model program for substance use prevention in schools, was moderated by gender, ethnicity, and acculturation. Gender differences in program efficacy may arise through boys' higher risk of drug use, inadequate attention to girls' developmental issues, or cultural factors like polarized gender expectations. Data came from a randomized trial in 35 Phoenix, Arizona, middle schools involving 4,622 mostly Latino 7th graders. Using multi-level mixed models and multiple imputation missing techniques, results for the total sample showed no gender differences in program effects on recent substance use, but the program was more effective in fostering boys' than girls' anti-drug norms. Subgroup analyses demonstrated several more beneficial program effects for boys than girls (less alcohol and cigarette use and stronger anti-drug norms), but only among less acculturated Latinos. There were no gender differences in program effects among more acculturated Latinos, nor among non-Latino whites.

Although the effects of the intervention were less pronounced for less acculturated Latinas than for their male counterparts...their participation in the program may better prepare them for inevitable exposure to substance offers as they develop and acculturate. (p. 139)

Less acculturated Latino boys -- with their higher baseline substance use rates and stronger pro-drug norms -- benefited more immediately from the intervention than their female counterparts. Without the intervention, these boys might influence their peers to adopt pro-drug norms and begin substance use. (p. 139)

As expected, there were no gender differences in program efficacy overall; instead, there was a pattern gender differences only in the sub-group that reflects more polarized gender roles -- less linguistically acculturated Latinos. Among this group, the intervention was significantly more effective among boys than among girls in preventing increases in recent alcohol and cigarette use

and in regarding the adoption of pro-drug norms. (pp. 138-139)

The results of this study...also suggest that prevention efforts may be strengthened by attending to the special risks and resiliencies of certain subgroups of female and male youth. (p. 139)

In our results, both more acculturated Latino boys and girls reported the most frequent substance use and the strongest pro-drug norms at baseline compared to both their less acculturated Latino and non-Latino White counterparts [contract to prior studies (e.g., Marsiglia et al., 2005)]. (pp. 139-140)

**Kulis, S., Nieri, T., Yabiku, S., Stromwall, L. K., & Marsiglia, F. F. (2007). Promoting reduced and discontinued substance use among adolescent substance users: Effectiveness of a universal prevention program. *Prevention Science*, 8(1), 35-49.**

The findings reveal that program participation positively affected rates of reduction and recent discontinuation of *alcohol* [italics added for emphasis] use as well as rates of complete recent discontinuation of use of all three gateway substances [alcohol, cigarette and marijuana], and that these desired program effects did not reverse or diminish across time. (p. 14)

However, fewer users of multiple substances reported complete discontinuation of substance use than users of a single substance. (p. 14)

...findings suggest that program effects were not concentrated exclusively among occasional users but rather extended to users across the prior use spectrum. (p. 14)

The large differences in rates between program participants and the control group in the transition toward reduced or recently discontinued alcohol use show that the *keepin' it REAL* universal prevention program had beneficial program effects for many prior users of substances. (p. 15)

**Hecht, M. L., Warren, J. R., Wagstaff, D. A., & Elek, E. (2008). Substance use, resistance skills, decision making, and refusal efficacy among Mexican and Mexican American preadolescents. *Health communication*, 23(4), 349-357.**

When we compared the means for boys and girls for our four explanatory variables [resistance skills, refusal self-efficacy, passive decision-making, active decision-making], we found that the male students reported less willingness to use a resistance strategy to avoid a hypothetical alcohol use offer, less confidence in their ability to refuse a drug offer, a greater willingness to let events or someone else make the decision, and less willingness to step in and make the decision actively (Table 3). (p. 355)

Multiple-logistic regression analyses demonstrated that the likelihood of lifetime use among the entire sample of preadolescents was related to resistance skills, refusal strategy, and willingness to use both active and passive decision-making styles. However, when the same logistic-regression model was fit to the data reported by each gender separately, different patterns for girls and boys. Among our preadolescent girls, lifetime use was not associated with the students' resistance skills, refusal efficacy, or the extent to which they were willing to engage in active or passive decision making. For boys, lifetime use was associated with the student's refusal efficacy and willingness to engage in both active and passive decision making. (p. 355)

Our data show that confidence in one's ability to make decisions reduces the likelihood of lifetime substance use, whereas passive and less systematic decision making increases the likelihood of use for Mexican and Mexican American preadolescents. (p. 355)

The likelihood that students reported ever having used one or more of the four substances increased as students reported a greater willingness to let events or someone else make decision (passive decision making); it decreased as students reported a greater willingness to step in and make the decision themselves (active decision making). (p. 354)

Our findings demonstrate that, in general, the associations found previously between skills and substance use for mainstream groups apply equally well to this ethnic group [Mexican and Mexican American preadolescents]. (p. 355)

**Hecht, M. L., Elek, E., Wagstaff, D. A., Kam, J. A., Marsiglia, F., Dustman, P., ... & Harthun, M. (2008). Immediate and short-term effects of the 5th grade version of the keepin' it REAL substance use prevention intervention. *Journal of Drug Education, 38(3), 225-251.***

...it may be that the preponderance of youths at this age are not ready for an intervention such as *keepin' it REAL* that promotes the more active decision making style because they do not have adequate impulse or self control. (pp. 13-14)

The standard, multicultural version of the intervention does appear to contribute to greater increases in the number of resistance strategies use to respond to substance use offers and thus was successful in one of its primary pedagogical strategies. (p. 13)

...students receiving the intervention also increased in their perceptions of the proportion of their peers who had tried substances more than control condition students. (p. 13)

The fact that while perceptions of peer use increased more for the multicultural condition students, but that on average, even those students believed that only "some" of their peers used could indicate that the program enlightened them to the fact that some of their peers use as opposed to almost none of their peers. (p. 13)

A goal of this study was to compare effectiveness of *keepin' it REAL (kiR)* curriculum compared to control schools' programming.

The 5<sup>th</sup> grade *kiR* curriculum generally appeared no more effective than the control schools' programming in changing students' resistance or decision-making skills; substance use intentions, expectancies, or normative beliefs; or lifetime and recent substance use. (p. 1)

...perhaps the narrative nature of the *kiR* intervention manifested its effects differently for a younger audience who interpreted the stories more literally...rather than more figurative interpretation... (p. 13)

**Kam, J. A., Matsunaga, M., Hecht, M. L., & Ndiaye, K. (2009). Extending the theory of planned behavior to predict alcohol, tobacco, and marijuana use among youth of Mexican heritage. *Prevention Science, 10(1), 41-53.***

...past research suggests that descriptive, injunctive, and personal norms are distinct and all are likely to be relevant to substance use decision among a variety of groups, including Mexican-heritage youth. (p. 43)

This study found support for including descriptive and personal norms and separating subjective norms into peer and parental injunctive norms. (p. 48)

...the results showed that positive [alcohol, tobacco, and other drug] ATOD attitudes, personal norms, and perceived behavioral control mediated the effects of parental injunctive and peer injunctive norms. Nevertheless, it was noted that there were three discrepancies from this study's hypothesis. The first discrepancy was the finding of only a partial mediation for the effects of descriptive norms on ATOD-use intentions. A second discrepancy stemming from the hypothesis was the finding that descriptive norms and peer injunctive norms did not have significant effects on perceived behavioral control. Third, peer injunctive norms did not have a significant effect on positive attitudes toward ATOD use, while parental injunctive and descriptive norms both had significant effects on attitudes. (p. 43)

The current study...proposes an extension of the [Theory of Planned Behavior] TPB based on norm focus theory (NFT) and examines whether within-group differences exist based on Mexican-heritage youths' country of origin. (p. 42)

This study's findings have important implications for the design and evaluation of health interventions among Mexican heritage youth. By pinpointing the differentiating impact of particular norms among this group, the second hypothesis enhances the ability to target relevant health message through formative research specifying each of the normative components. (p. 49)

This study's findings also suggest that prevention researchers should consider the cultural and ethnic distinctions of ATOD-use predictors to construct culturally sensitive and effect program (Hecht and Krieger 2006; Resnicow et al. 2000). (p. 50)

**Elek, E., Wagstaff, D. A., & Hecht, M. L. (2010). Effects of the 5th and 7th grade enhanced versions of the keepin'it REAL substance use prevention curriculum. *Journal of Drug Education*, 40(1), 61-79.**

- Note: the 2010 5<sup>th</sup> grade kiR program is no longer being implemented

Students in a few *kiR* conditions weakened more in their personal norms against substance use, demonstrated smaller increases in the number or resistance strategies they used, perceived greater increases in the prevalence of peer use, and reported greater increases in the positive expectancies of substance use. (p. 74)

Participating in *kiR-Plus* in both the 5<sup>th</sup> and 7<sup>th</sup> grades appeared to lead to perceptions of higher prevalence of peer substance use than participating in *kiR-Plus* in either the 5<sup>th</sup> or 7<sup>th</sup> grades alone. (p. 74)

Students receiving *kiR-AE* twice also reported more limited increases in their substance use prevalence, and smaller increases in perceptions of peer substance than did students participating in *kiR-AE* for only the 5<sup>th</sup> grade, and small decreases in their personal anti-drug

norms than did students participating in *kiR-AE* for only the 7<sup>th</sup> grade. (p. 74)

The strong emphasis of the *kiR* curricula on modeling resistance strategies appears to lead to greater increases in perceptions of peer use among 5<sup>th</sup> grade students, and greater increases in their substance use over the long term. (pp. 74-5)

**Kam, J. A., Cleveland, M. J., & Hecht, M. L. (2010). Applying general strain theory to examine perceived discrimination's indirect relation to Mexican-heritage youth's alcohol, cigarette, and marijuana use. *Prevention Science, 11*(4), 397-410.**

Longitudinal data provided by 1,106 Mexican-heritage youth from 5<sup>th</sup> through 8<sup>th</sup> grades from 29 Phoenix, AZ public schools; students' average age was 10.4 years ( $SD = .61$ ) at Wave 1. Schools were assigned to either experimental (presumably for the *keepin' it REAL* program) or control conditions.

Although initial levels of perceived discrimination were significantly associated with initial levels of acculturation stress (accounting for program effects, sex, religiosity, and the multilevel-structured data), initial levels of acculturation stress were not significantly associated with initial levels of [alcohol, tobacco, and other drug] ATOD use...Across waves, however, their mean levels of ATOD use increased, which led to a significant association between the slopes of acculturation stress and ATOD use. (p. 406)

Increases in perceived discrimination exhibited an indirect relation to increases in ATOD use through increases in acculturation stress. (p. 406)

Initial levels of perceived discrimination were indirectly related to changes in ATOD use through changes in acculturation stress. (p. 406)

This study revealed that perceived discrimination and acculturation stress place Mexican-heritage youth at risk for ATOD. (p. 406)

General Strain Theory (GST; Agnew 2001) was used as a framework to investigate perceived discrimination's indirect relation to substance use behaviors. (p. 398)

Although evaluation of the prevention program was beyond this study's objective, significant program effects were not found in the current study. (p. 402)

...a culturally adapted prevention intervention that addresses perceived discrimination, acculturation stress, and ATOD use would likely benefit Mexican-heritage youth, given the relevancy of such topics among this particular group. (p. 406)

**Marsiglia, F. F., Kulis, S., Yabiku, S. T., Nieri, T. A., & Coleman, E. (2011). When to intervene: Elementary school, middle school or both? Effects of *keepin' it REAL* on substance use trajectories of Mexican heritage youth. *Prevention Science, 12*(1), 48-62.**

This article presents the findings of a study exploring two questions: What age is most efficacious to expose Mexican heritage youth to drug abuse prevention interventions, and what dosage of the

prevention intervention is needed? These issues are relevant to Mexican heritage youth—many from immigrant families—in particular ways due to the acculturation process and other contextual factors. The study utilized growth curve modeling to investigate the trajectory of recent substance use (alcohol, cigarettes, marijuana, inhalants) among Mexican heritage students (N = 1,670) participating in the keepin' it REAL drug prevention program at different developmental periods: the elementary school (5th grade), middle school (7th grade), or both. The findings provide no evidence that intervening only in elementary school was effective in altering substance use trajectories from 5th to 8th grade, either for licit nor illicit substances. Implementing keepin' it REAL in middle school alone altered the trajectories of use of all four substances for Mexican heritage youth. A double dose of prevention, in elementary and middle school proved to be equally as effective as intervening in 7th grade only, and only for marijuana and inhalants. The decrease in use of marijuana and inhalants among students in the 7th-grade-only or the 5th- and 7th-grade interventions occurred just after students received the curriculum intervention in 7th grade. These results are interpreted from an ecodevelopmental and culturally specific perspective and recommendations for prevention and future research are discussed.

**Marsiglia, F. F., Ayers, S., Gance-Cleveland, B., Mettler, K., & Booth, J. (2012). Beyond primary prevention of alcohol use: A culturally specific secondary prevention program for Mexican heritage adolescents. *Prevention Science*, 13(3), 241-251.**

361 students from a subset of 6 schools (those assigned to condition 3 of the larger, overarching study) of whom 109 7<sup>th</sup> grade students were referred to and participated in the *REAL Groups* and the remaining 252 were control/*non-REAL Group*; significant differences were found between the two groups (age, household makeup)

Incorporating aspects of culture in a small group setting may serve as a protective factor against substance use for Mexican heritage adolescents. Although approximately 25% of participants in *REAL Groups* were not of Mexican heritage, these findings suggest that building cultural norms and values and having lessons rooted in these cultural norms of values can be a source of resilience for Mexican adolescents...future research should build upon these findings to further refine the understandings of how cultural norms and values serve to protect... (p. 9)

...incorporating a culturally adapted mutual aid model is one tool which can be used to reduce substance use among Mexican heritage adolescents. (p. 9)

The results of this study support the hypothesis that providing an additional secondary prevention program for higher-risk students in addition to a primary prevention program reduces alcohol use among middle school-age students when compared to higher-risk students who did not receive the secondary prevention program. (p. 9)

The aim of this study is to test the efficacy of *REAL Groups* as a secondary substance use prevention program and companion to the primary prevention program, *keepin' it REAL*.

**Choi, H. J., Krieger, J. L., & Hecht, M. L. (2013). Reconceptualizing efficacy in substance use prevention research: refusal response efficacy and drug resistance self-efficacy in adolescent substance use. *Health communication*, 28(1), 40-52.**

In the current study, the REAL (refuse, explain, avoid, and leave) refusal strategies are used across substances, age cohorts, and cultural groups, it is not surprising that respondents find them efficacious across substances in this study. (p. 48)

Findings also show that refusal response efficacy (RE) moderates the relationship between alcohol self-efficacy (ASE) and alcohol use and marijuana self-efficacy (MSE) and marijuana use, respectively. However the role of refusal RE as a moderator differs for each substance. For alcohol use, as predicted, the relationship between ASE and alcohol use was negative and refusal RE efficacy weakened the strength of this relationship. (p. 48)

On the other hand, compared with alcohol use, refusal RE plays a more complex role for marijuana use. For youth with high refusal RE, the relationship between MSE and marijuana use was positive, but for youth with low refusal RE the relationship was negative...Possibly, adolescents with high refusal RE perceive that they could refuse marijuana offers if they wanted to, yet this small subpopulation was generally disinclined to want to refuse. (p. 48)

Based on the current findings, it appears that interventions should target a variety of drug-specific SEs. Even though individuals might develop alcohol-resistance SE, this may only be helpful in refusing alcohol offers but not marijuana offers. (p. 49)

The inclusion of refusal RE in drug-prevention program curriculum may enable youth to be more capable of resisting drug offers and decreasing substance use. Individuals seem to employ similar evidence-based strategies (REAL) in refusing various substances, and their confidence in these strategies effectiveness is related to decreased use. This individuals not only must be trained how to use the REAL strategies when receiving both alcohol and marijuana offers but also must be convinced by the prevention intervention that this strategy works equally well for both or even either substance. (p. 49)

**Hopfer, S., Hecht, M. L., Lanza, S. T., Tan, X., & Xu, S. (2013). Preadolescent drug use resistance skill profiles, substance use, and substance use prevention. *The journal of primary prevention, 34(6), 395-404.***

Possessing the seven characteristics simultaneously as represented in the highly competent skill profile was associated with reduced future (8<sup>th</sup> grade) substance use in his study sample. These findings are consistent with the literature that suggests that the ability to generate multiple responses (also referred to as divergent responding) may be more important than the ability to respond consistently with one skill in assertively prosocial ways (Wright et al., 2004). (p. 7)

...study findings suggest that teaching skilled social interactions as early as preadolescence can bring beneficial effects in regards to reduced future substance use. (p. 7)

In this study, latent class analysis indicates that LEAVE and AVOID strategies appear to account for more of the observed effects in defining skill profiles than do REFUSE and EXPLAIN. (p. 7) (Due to ethnicity? Age? Other unknown factor?)

Latent transition analysis revealed that students' skills and refusal confidence increased over time as expected, and that membership into the highly competent group increased to a larger degree in treatment than control schools...differences between treatment and control schools were not statistically significant. (p. 7)

...this study is the first to define preadolescents' resistance skills through the use of latent class analysis. By using a latent class approach we were able to characterize the different stages of learning resistance skills and refusal confidence. (p. 7)

Perhaps a more developmentally appropriate strategy would be guided by socio-emotional learning (SEL) theory... (p. 7)

**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. doi:10.1080/10410236.2012.762861**

Paper describes a *Narrative Engagement Framework (NEF)* for guiding communication-based prevention efforts. This framework suggests that personal narratives have distinctive capabilities in prevention. The paper discusses the concept of narrative, links narrative to prevention, and discusses the central role of youth in developing narrative interventions. As illustration, the authors describe how the NEF is applied in the *keepin' it REAL* adolescent drug prevention curriculum, pose theoretical directions, and offer suggestions for future work in prevention communication.

**Graham, J.W., Pettigrew, J., Miller-Day, M., Krieger, J.L., Zhou, J., & Hecht, M.L. (2014). Random assignment of schools to groups in the Drug Resistance Strategies Rural Project: Some new methodological twists. *Prevention Science, 15*(4), 516-525. DOI 10.1007/s11121-013-0403-9**

Assigned 39 rural Pennsylvania and Ohio schools to three conditions (rural, classic, control). But even with 13 schools per condition, achieving pretest equivalence on important variables is not guaranteed. We collected data on six important school-level variables: rurality, number of grades in the school, enrollment per grade, percent white, percent receiving free/assisted lunch, and test scores. Key to our procedure was the inclusion of school-level drug use data, available for a subset of the schools. Also, key was that we handled the partial data with modern missing data techniques. We chose to create one composite stratifying variable based on the seven school-level variables available. Principal components analysis with the seven variables yielded two factors, which were averaged to form the composite inflate-suppress (CIS) score which was the basis of stratification. The CIS score was broken into three strata within each state; schools were assigned at random to the three program conditions from within each stratum, within each state. Results showed that program group membership was unrelated to the CIS score, the two factors making up the CIS score, and the seven items making up the factors. Program group membership was not significantly related to pretest measures of drug use (alcohol, cigarettes, marijuana, chewing tobacco; smallest  $p > .15$ ), thus verifying that pretest equivalence was achieved.

**Miller-Day, M., Pettigrew, J., Hecht, M., Shin, Y., Graham, J., & Krieger, J. (2013). How prevention curricula are taught under real-world conditions: Types of and reasons for teacher adaptations. *Health Education, 113* (4), 324-344.**

Teachers self-reported adapting more than 68 percent of prevention lessons, while independent observers reported more than 97 percent of the observed lessons were adapted in some way. Types of adaptations included: altering the delivery of the lesson by revising the delivery timetable or delivery context; changing content of the lesson by removing, partially covering, revising, or adding content; and altering the designated format of the lesson (such as assigning small group activities to students as individual work). Reasons for adaptation included responding to constraints (time, institutional, personal, and technical), and responding to student needs (students' abilities to process curriculum content, to enhance student engagement with material).

**Pettigrew, J., Graham, J. W., Miller-Day, M., Hecht, M. L., Krieger, J. L., & Shin, Y. J. (2015). Adherence and delivery: Implementation quality and program outcomes for the seventh-grade keepin' it REAL program. *Prevention Science, 16*(1), 90-99.**

Poor implementation quality (IQ) is known to reduce program effects making it important to consider IQ for evaluation and dissemination of prevention programs. However, less is known about the ways specific implementation variables relate to outcomes. In this study, two versions of keepin' it REAL, a seventh-grade drug prevention intervention, were implemented in 78 classrooms in 25 schools in rural districts in Pennsylvania and Ohio. IQ was measured through observational coding of 276 videos. IQ variables included adherence to the curriculum, teacher engagement (attentiveness, enthusiasm, seriousness, clarity, positivity), student engagement (attention, participation), and a global rating of teacher delivery quality. Factor analysis showed that teacher engagement, student engagement, and delivery quality formed one factor, which was labeled delivery. A second factor was adherence to the curriculum. Self-report student surveys measured substance use, norms (beliefs about prevalence and acceptability of use), and efficacy (beliefs about one's ability to refuse substance offers) at two waves (pretest, immediate posttest). Mixed model regression analysis which accounted for missing data and controlled for pretest levels examined implementation quality's effects on individual level outcomes, statistically controlling for cluster level effects. Results show that when implemented well, students show positive outcomes compared to students receiving a poorly implemented program. Delivery significantly influenced substance use and norms, but not efficacy. Adherence marginally significantly predicted use and significantly predicted norms, but not efficacy. Findings underscore the importance of comprehensively measuring and accounting for IQ, particularly delivery, when evaluating prevention interventions.

**Shin, Y., Miller-Day, M., Hecht, M. L., & Krieger, J. L. (2017). Entertainment education videos as a persuasive tool for school-based substance use prevention intervention, keepin' it REAL. *Health Communication, 33*(7), 896-906. DOI: 10.1080/10410236.2017.1321163**

Examined hypothesized indirect effects of engagement with keepin' it REAL (kiR) curriculum entertainment-education (E-E) videos on youth alcohol use via youth drug offer refusal efficacy. Students in 7th grade (N = 1,464) at 25 public schools in two Midwestern states were randomly assigned to one of the two versions of the kiR curriculum, the kiR urban version and the kiR rural version. Each version had their own set of five culturally-grounded E-E videos depicting communicative skills to refuse drug offers. Differential effects for engagement components were expected depending on the degree of cultural matching. Pre/post surveys were administered at the beginning and the end of 7th grade. Structural equation modeling analysis resulted in partial

support for the research hypotheses. Rural youth receiving the urban curriculum who reported higher interest in the E–E videos were more likely to report having higher refusal efficacy, and in turn, less likely to use alcohol. Rural youth receiving the rural curriculum who identified with the E–E video main characters were more likely to report having higher refusal efficacy, and in turn, less likely to use alcohol. Implications for E–E health promotion are discussed.