

## Preventing Youth Violence and Delinquency through a Universal School-Based Prevention Approach

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### **Abstract:**

Violence is an important public health problem among adolescents in the United States. Substance use and violence tend to co-occur among adolescents and appear to have similar etiologies. The present study examined the extent to which a comprehensive prevention approach targeting an array of individual-level risk and protective factors and previously found effective in preventing tobacco, alcohol, and illicit drug use is capable of decreasing violence and delinquency. Schools ( $N=41$ ) were randomly assigned to intervention and control conditions. Participants in the 20 intervention schools received the *Life Skills Training* prevention program including material focusing on violence and the media, anger management, and conflict resolution skills. Survey data were collected from 4,858 sixth grade students prior to the intervention and three months later after the intervention. Findings showed significant reductions in violence and delinquency for intervention participants relative to controls. Stronger prevention effects were found for students who received at least half of the preventive intervention. These effects include less verbal and physical aggression, fighting, and delinquency. The results of this study indicate that a school-based prevention approach previously found to prevent tobacco, alcohol, and illicit drug use can also prevent violence and delinquency.

**Keywords:** Adolescence | Violence | Aggression | Prevention | Substance use

### **Article:**

Violence is a major public health problem that has received increased attention in recent years. Suicide and homicide are the second and third leading causes of injury-related death in the United States and homicide risk increases dramatically during adolescence (Hoyert et al., 2006). A nationwide survey of high school students (CDC, 2006) found that 36% of students reported being in a physical fight one or more times in the 12 months preceding the survey and 19% reported carrying a weapon (e.g., gun, knife, or club) on one or more of the 30 days preceding

the survey. Violence is an even greater problem for inner-city, minority youth who are at the highest risk for violence (Hammond & Yung, 1993).

Data from several sources suggest a strong interrelationship between drug abuse and violence (e.g., Elliott, Huizinga, & Menard, 1989; US DHHS, 2001). It is not only the case that drug abuse is a predictor of later involvement in assaults, but also that homicides and other types of assaultive violence occur while individuals are under the influence of alcohol or illicit drugs or are involved in drug-related criminal activity (Tardiff & Gross, 1986). Suicidal behavior, another form of violence, has also been found to be related to aggression and drug use among high school students (Garrison, McKeown, Valois, & Vincent, 1993).

A common set of demographic, environmental, interpersonal, and intrapersonal factors appears to be involved in the etiology of drug abuse and violence. As summarized in the Surgeon General's Report on Youth Violence (US DHHS, 2001) and in review articles (e.g., Elliott, Huizinga, & Ageton, 1985; Hammond & Yung, 1993), a number of risk factors have been associated with youth violence. Demographic factors include poverty, ethnic-minority group membership, gender (male), age, and living in the inner city. Family factors include weak family bonding, ineffective monitoring and supervision; exposure to and reinforcement for violence; poor impulse control and problem-solving skills of caretakers; and the acquisition of expectations, attitudes, beliefs and emotional responses which support or tolerate the use of violence. Dispositional or temperamental factors such as antisocial personality, attention deficit disorder, or poor impulse control have also been implicated. Additional factors include difficulty coping with anger and frustration, low self-efficacy, poor problem-solving skills, and poor social skills. Related to this is the use of alcohol and drugs, poor academic performance, and involvement with a delinquent peer group where violence is modeled and reinforced. Many of these same factors have been associated with tobacco, alcohol, and illicit drug use (Botvin, 2000; Farrell, Danish, & Howard, 1992; Hawkins, Catalano, & Miller, 1992).

Substantial progress has been made in developing effective approaches for preventing the use of tobacco, alcohol, and illicit drugs. Prevention approaches designed to decrease the impact of social influences to use tobacco, alcohol, and illicit drugs by teaching resistance skills and anti-substance use norms either alone or in combination with teaching generic personal self-management skills and social skills have been shown to significantly reduce the rate of adolescent substance use (Botvin & Griffin, 2003). In some instances, reductions in substance use have been observed for over five years (Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995; Griffin, Botvin, & Nichols, 2006). Moreover, evidence from recent follow-up studies testing universal, school-based prevention approaches demonstrates the potential of these interventions for preventing multiple problem behaviors, including some not directly targeted. For example, the *Life Skills Training* (LST) program has been found to not only reduce several forms of substance use (e.g., Botvin et al., 1995; Botvin et al., 2001) but also to reduce risky driving among high schools students (Griffin, Botvin, & Nichols, 2004) and HIV risk among young adults (Griffin et al., 2006). These effects are hypothesized to be the result of the relationship

between one or more forms of substance use and other health risk behaviors (such as alcohol use and risky driving) and/or the result of one or more common etiologic determinants affected by the preventive intervention.

The similarity in the etiology of substance use, violence, and delinquency suggests the possibility that these behaviors may be prevented by a common intervention strategy. The purpose of the current study, therefore, was to determine the extent to which a comprehensive prevention approach previously found effective for preventing tobacco, alcohol, and illicit drug use is capable of decreasing violence and delinquency in a population of inner-city, minority youth.

## **Method**

### **Sample**

The sample consisted of 4,858 sixth-grade students from 41 New York City public and parochial schools. The sample was 51% boys and 49% girls, and the racial/ethnic composition of the sample was 39% African-American, 33% Hispanic, 10% White, 6% Asian, 2% Native American, and 10% of other or mixed ethnicity. The sample was composed largely of economically disadvantaged youth (55% received free lunch at school), with 30% living in mother-only households.

### **Procedure**

After informed consent was obtained from students, participants completed the pretest assessment in the sixth grade. Students in 20 experimental schools ( $n=2,374$ ) then received the 15-session prevention program taught by classroom teachers, and students in 21 control schools ( $n=2,484$ ) received the standard health education curriculum normally provided in New York City schools. Approximately three months later students completed the posttest assessment. Questionnaires were administered during a regular class period by a team of data collectors who were members of the same ethnic groups as participating students. Data were collected following a detailed protocol used in similar previous prevention studies (e.g., Botvin et al., 1995; Botvin et al., 2001).

### **Intervention**

The preventive intervention tested in this study, *Life Skills Training* (LST), was designed to address several important cognitive, attitudinal, psychological, and social factors related to tobacco, alcohol, and illicit drug use and violence. Students were taught a variety of cognitive-behavioral skills for problem-solving and decision-making, resisting media influences, managing stress and anxiety, communicating effectively, developing healthy personal relationships, and asserting one's rights. These skills are taught using a combination of interactive teaching techniques including group discussion, demonstration, modeling, behavioral rehearsal, feedback and reinforcement, and behavioral "homework" assignments for out-of-class practice.

In addition to these general life skills for enhancing personal and social competence, the LST program taught students skills related more specifically to substance use and violence. Students were taught the application of general assertiveness skills in situations in which they might experience direct interpersonal pressure to use drugs or act aggressively as well as anger management and conflict resolution skills. Material was also provided to reinforce norms against substance use and violence, and to promote anti-substance use or anti-violence norms. Intervention materials included a teacher's manual with detailed lesson-plans and student guides.

## Measures

Violence and delinquent behaviors were assessed by questionnaire. The violence measures assessed verbal aggression, physical aggression, and fighting. The verbal and physical aggression items are similar to those used by Elliott, Huizinga, and Menard (1989). Delinquent behaviors were assessed using items similar to those used by Hawkins and his associates (Arthur et al., 2002). Where appropriate, reliabilities (Cronbach's  $\alpha$ ) for the scales are indicated in parentheses in the description that follows.

### **Verbal aggression**

Verbal aggression was measured by seven items ( $\alpha=.90$ ) assessing the number of times in the past month that the student reported name calling, yelling, cursing, arguing, telling someone off, saying mean things, or threatening to hurt someone. Response options ranged from "never" (1) to "5 or more times" in the past month (5).

### **Physical aggression**

Two measures of physical aggression were used. Mild physically aggressive acts were assessed by three items ( $\alpha=.81$ ) asking students the number of times in the past month they engaged in pushing or shoving, tripping, or hitting someone. Response options ranged from "never" (1) to "5 or more times" in the past month (5).

### **Fighting**

More serious physically aggressive acts were assessed by four items ( $\alpha=.81$ ) asking students the number of times in the past year they engaged in picking a fight with someone, hitting someone to seriously hurt them, beating someone up who provoked you, and taking part in a group fight. Response options ranged from "never" (1) to "5 or more times" in the past year (5).

### **Delinquency**

Delinquency was measured by six items ( $\alpha=.76$ ) assessing the number of times in the past year that the student reported destroying others property, throwing objects at people or cars, shoplifting, stealing from others, taking something from someone by force, or intentionally

vandalizing a school or other building. Response options ranged from “never” (1) to “5 or more times” in the past year (5).

### Implementation fidelity

Project staff in randomly selected classrooms monitored program implementation. Using observation forms developed for each prevention session, trained staff members observed teachers and recorded how much of the material allocated for each session was actually covered in the classroom: 65 sessions were observed for an average of 1.85 observations per teacher. The completeness of the implementation of the program was quantified by calculating the proportion of prevention objectives covered during each session observed (number of objectives covered divided by the total number of actual curriculum objectives for the particular session observed). The mean number of program points covered across all observations was 45.5% ( $SD=17.6$ ) and the range was 21% to 86%.

### Data analysis

Data were analyzed to (1) determine the baselines frequencies of verbal and physical aggression, fighting, and delinquency in this population; (2) assess baseline equivalence of conditions; and (3) test for intervention effects. Separate analyses were conducted for any verbal aggression in the past month, physical aggression in the past month, fighting in the past year, and delinquency in the past year. In order to test for potential intervention effects on more frequent levels of the target behaviors, analyses were also conducted to determine the effectiveness of the intervention with respect to the top quartile of the distribution of these behaviors ( $\geq 5$  events in the past month for verbal aggression,  $\geq 3$  events in the past month for physical aggression,  $\geq 3$  events in the past year for fighting and delinquent behavior). In view of the variability of implementation fidelity, separate analyses were conducted to determine the effectiveness of the preventive intervention on students who received at least half of the prevention program.

**Table 1** Predicting violence and delinquency at the posttest (full sample)

<b>Outcome behavior</b>	<b>OR</b>	<b>95% CI</b>		<b>p-value</b>
Any level of outcome behavior				
Verbal aggression in past month	0.766	0.442	1.326	0.340
Physical aggression in past month	0.758	0.495	1.162	0.203
Fighting in past year	0.783	0.551	1.115	0.175
Delinquency in past year	0.684	0.477	0.982	0.039
High frequency of outcome behavior (top quartile)				

Verbal aggression in past month ( $\geq 5$ Events)	0.899	0.466	1.734	0.751
Physical aggression in past month ( $\geq 3$ Events)	0.919	0.626	1.349	0.664
Fighting in past year ( $\geq 3$ Events)	0.742	0.566	0.972	0.030
Delinquency in past year ( $\geq 3$ events)	0.643	0.478	0.867	0.004

*Note.* 2-tailed tests were used in all analyses. OR, odds ratio; CI, confidence interval.

Because the intervention was randomized and administered at the school level, it was necessary to control for intra-cluster correlations (ICCs) among students within schools. In the present context, ICCs quantify the degree of similarity of students' questionnaire responses within schools and how aggression and delinquency rates vary at the school level. Therefore, each analysis was run using the generalized estimating equations (GEE) approach in SAS PROC GENMOD (SAS Institute, 2005) in order to adjust the estimated standard error to account for the within-cluster correlation. This approach generally provides for a more conservative test of the hypothesis when a positive ICC is present (Norton, Bieler, Ennett, & Zarkin, 1996).

## Results

The frequencies of verbal aggression, physical aggression, fighting, and delinquent behaviors were relatively high at baseline. For example, verbal aggressive episodes in the past month were reported by 93.5% of the sample, with a median of 3 episodes for the entire sample. Mild physical aggression in the past month was reported by 68.3% of the sample. Serious physical aggression (fighting) in the past year was reported by 56.5% of the sample, and delinquency in the past year was reported by 53.2% of the sample. A series of *t*-tests revealed that the intervention and control groups did not differ on any of the violence or delinquency scales at baseline. Moreover, there were no differences across conditions in terms of gender or academic performance (grades in school) at baseline. The intervention group had more Hispanic students (36.7%) than controls (30.2%),  $\chi^2(1)=23.2, p<.003$ , while the control group had more black students (43.8%) than the intervention group (33.1%),  $\chi^2(1)=59.2, p<.001$ .

### Intervention effects

Separate GEE analyses were conducted to examine the effect of the preventive intervention on verbal and physical aggression, fighting, and delinquency. Each outcome measure at posttest was used as the dependent variable in separate analyses, with pretest value, gender, percent black, percent Hispanic, grades in school, and implementation score as covariates. As noted above, separate analyses were conducted for the full sample and for the subset of students that received at least half of the intervention (referred to as the "fidelity sample" below).

### Full sample

As shown in Table 1, GEE analyses revealed that for the full sample the intervention reduced Delinquency in the Past Year (OR=.684, 95% CI=.477, .982,  $p<.039$ ). The intervention also reduced Frequent Fighting in the Past Year (OR=.742, 95% CI=.566, .972,  $p<.030$ ), and Frequent Delinquency in the Past Year (OR=.643, 95% CI=.478, .867,  $p<.004$ ).

### Fidelity sample

As shown in Table 2, GEE analyses revealed that for the students who received at least half of the preventive intervention, there were significant prevention effects on Physical Aggression in the Past Month (OR=.501, 95% CI=.374, .671,  $p<.001$ ), on Violence in the Past Year (OR=.525, 95% CI=.374, .736,  $p<.002$ ), and on Delinquency in the Past Year (OR=.537, 95% CI=.360, .799,  $p=.002$ ). The intervention also had significant preventive effects on the top quartiles of the outcome variables, including Frequent Verbal Aggression in the Past Month (OR=.503, 95% CI=.305, .830,  $p<.007$ ), on Frequent Physical Aggression in the Past Month (OR=.614, 95% CI=.444, .849,  $p<.003$ ), on Frequent Fighting in the Past Year (OR=.559, 95% CI=.397, .786,  $p<.001$ ), and on Frequent Delinquency in the Past Year (OR=.540, 95% CI=.322, .907,  $p<.020$ ).

**Table 2** Predicting violence and delinquency at the posttest (fidelity sample)

Outcome behavior	OR	95% CI		<i>p</i> -value
Any level of outcome behavior				
Verbal aggression in past month	0.721	0.358	1.455	0.361
Physical aggression in past month	0.501	0.374	0.671	0.001
Fighting in past year	0.525	0.374	0.736	0.002
Delinquency in past year	0.537	0.360	0.799	0.002
High frequency of outcome behavior (top quartile)				
Verbal aggression in past month ( $\geq 5$ events)	0.503	0.305	0.830	0.007
Physical aggression in past month ( $\geq 3$ events)	0.614	0.444	0.849	0.003
Fighting in past year ( $\geq 3$ events)	0.559	0.397	0.786	0.001
Delinquency in past year ( $\geq 3$ events)	0.540	0.322	0.907	0.020

*Note.* 2-tailed tests were used in all analyses. OR, odds ratio; CI, confidence interval.

### Discussion

The results of this study indicate that a preventive intervention previously found to be effective in preventing tobacco, alcohol, and illicit drug use is also effective for preventing violence and delinquency. Students who received the *Life Skills Training* (LST) program were significantly less likely to engage in physical fighting or delinquent behavior during the past year. Stronger prevention effects were found for students who received at least half of the LST program. These students were significantly less likely to engage in verbal aggression, physical aggression, fighting, and delinquency than students in the control condition. For example, LST students were less likely than students in the control group to argue or tell someone off, push or shove, and get into physical fights. They were also less likely than controls to engage in delinquent behaviors such as destroying property, shoplifting, stealing, taking something by force, or vandalizing a school or other building.

The findings from this study have important implications for theory and practice. On a theoretical level, these results provide additional support for a theory of multiple problem behavior which posits interrelationships among an array of problem behaviors and a common set of etiologic factors. Such an integrated, unifying theoretical framework has its roots in problem behavior theory (Jessor & Jessor, 1977) and more recent theoretical formulations such as the theory of triadic influence (Flay & Petraitis, 1994).

The results of this study also provide empirical support for recommendations to develop and utilize more comprehensive, integrated approaches to prevention (Biglan & Cody, 2003; Flay, 2002). Currently, most efforts to prevent problem behaviors and/or health risk behaviors involve separate interventions targeting each risk behavior. Findings from this study argue for greater integration of prevention efforts to more efficiently target an array of theoretically and empirically related behaviors such as substance use, aggression and violence, delinquency, and risky sexual behavior. On a practical level, school-based interventions capable of preventing multiple problem behaviors are important because of the potential for decreasing the burden on teachers and administrators, class time, and scarce resources—thereby increasing the potential for greater adoption, implementation, and sustainability.

The prevention strategy incorporated into the LST approach involves the inclusion of both generic and domain-specific content taught using interactive intervention methods (Botvin, 2000). Generic material is designed to target distal etiologic factors through the teaching of personal coping skills and general social skills. Domain-specific material is designed to target proximal etiologic factors such as knowledge, attitudes, norms, and skills related to tobacco, alcohol, and illicit drug abuse prevention. In addition, the LST intervention tested in this study also included domain-specific material related to violence prevention such as content to promote anti-violence norms, resistance to violence-related media influences, anger management, and conflict resolution. Additional research should focus on the effectiveness of this type of prevention strategy for preventing other health risk behaviors with and/or without the inclusion of additional domain-specific material related to those behaviors.

Prior research shows a relationship between implementation fidelity and effectiveness, and underscores the need for interventions to be delivered with fidelity (e.g., Botvin et al., 1995; Lillehoj, Griffin, & Spoth, 2004). Typically, greater fidelity is associated with stronger prevention effects and an increased number of significant outcomes. The same was true in this study. Yet, as evidence-based prevention approaches are taken to scale and utilized in real-world settings, implementation fidelity has emerged as an issue of potential concern. Fidelity varies considerably when evidence-based programs are delivered by practitioners in real-world settings, often falling below levels achieved during the well-controlled randomized trials establishing their effectiveness. Thus, a reasonable concern is that fidelity in real-world settings may fall below the threshold necessary for effectiveness. The results of the current study may be somewhat encouraging in this regard. Prevention effects were found for the full sample even though the overall level of fidelity was lower in this study than in previous randomized trials with LST.

Moreover, anecdotal evidence suggests that adaptations by practitioners may be one cause of lower fidelity. Indeed, there appears to be a natural tension between the imperative for fidelity and the natural inclination of practitioners toward some degree of local adaptation. Resolving this apparent conflict is a challenge to prevention science. Here again, the results of this study may prove helpful. Using a minimal standard of fidelity (50% or more of the program), reasonably strong prevention effects were obtained for most measures of violence and delinquency, suggesting that there may be more room for flexibility and adaptation in evidence-based prevention programs than has been previously thought.

The current study has several notable strengths including a randomized, control group design, standardized data collection procedures, a large sample size, a predominantly minority population, and analyses that controlled for intra-cluster correlations. However, additional follow up is necessary to determine the durability of these prevention effects. Moreover, more research is needed to determine the impact of LST and other similar universal prevention programs on more serious levels of aggression and violence as well as on other health risk behaviors.

Prior research has demonstrated the effectiveness of the LST approach for preventing tobacco, alcohol, and illicit drug use. Follow-up studies not only provide evidence of the long-term effectiveness of LST, but have also demonstrated that it can prevent risky driving among high school students and reduce HIV risk among young adults. The current study extends that research and provides new empirical evidence concerning the application of the LST program to problem behaviors other than tobacco, alcohol, and illicit drug use. These data indicate that this type of preventive intervention can reduce verbal and physical aggression, fighting, and delinquency. More research is needed to determine the durability of these effects as well as the extent to which this type of prevention approach can prevent more serious forms of violence (such as assault, assault with a weapon, and homicide) and other health risk behaviors. This study also provides further support for the utility of an integrated, unifying theoretical framework of multiple problem behaviors to guide the development or refinement of preventive

interventions designed to more efficiently target a broad range of problem or health risk behaviors.

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