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Preliminary Evaluation of a Multimedia Violence Prevention Program for Adolescents

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Abstract

Objective. This study evaluated the impact of a computer-based intervention (SMART Talk) containing a number of theoretically driven anger-management and conflict-resolution modules.

Methods . Middle school students ($N = 558$) were randomly assigned by academic teams to either intervention or control group and completed assessments before and after implementation.

MANCOVA was used to assess differences between the 2 groups on self-awareness, attitudes toward violence, self-efficacy, intentions to use nonviolent strategies, and aggressive behavior.

Results . The intervention was successful in diminishing students' beliefs supportive of violence and increasing their intentions to use nonviolent strategies. No outcome differences were found for gender, race, or eligibility for free or reduced lunch (a measure of socioeconomic status).

Conclusions . Multimedia might be useful in changing some of the mediating factors associated with violence and might have the potential for changing violent behavior.

The increase in youth violence in the early 1990s has prompted national demands to curtail this trend.^{1,2} Additionally, as an age-group, adolescents are at increasing risk for exposure to violence as a victim, witness, or perpetrator.³ In 1994, one third of all homicides occurred among persons aged 15 to 24 years.⁴ Although teen homicides have decreased somewhat in the past several years, homicide is still the second leading cause of death among 15- to 24-year-olds and the third leading cause of death among 5- to 14-year-olds.⁵

Although schools are rarely sites of violent deaths,⁶ the prevalence of physical fighting and weapon carrying is sufficiently high to warrant serious concern. Findings from a 1995 national survey of students in grades 9 to 12 revealed that 15.5% had been involved in a fight on school property in the past year, and about 10% reported having carried a weapon on school grounds in the last 30 days.⁷ For adolescents between the ages of 12 and 15 years, the school setting is the most common location for violent victimization.⁸

To ensure the healthy development and safety of students, school personnel have begun implementing various programs aimed at preventing violence among adolescents.⁹⁻¹¹ Despite the availability of a variety of interventions, no one program has been identified as the most effective approach to reducing violence in adolescence. School-based interventions range from information campaigns to school security measures to teacher-management practices to classroom-based conflict-resolution programs and peer mediation.^{12,13} Many school programs are based on the assumption that students learn to respond to aggravating and frustrating situations with aggression and anger by observing how others handle social situations. If violent responses are learned, it follows logically that nonviolent responses also can be learned.

A notable gap in school-based violence-prevention efforts is the use of computer-based curricula and electronic media. Without a doubt, electronic media are enormously popular with adolescents, who have reported spending an average of 29 hours a week watching television.¹⁴ Middle school students also report spending an average of 4 hours per week playing video games.¹⁵ In their viewing and video-game playing, teens frequently observe models using weapons and violence. Research in this field has documented that frequent exposure to violence on television is associated with higher levels of aggressive behavior in both children and adults.^{16, 17} DuRant and colleagues conclude, "Even modest levels of viewing ... may result in substantial exposure to violence and weapon carrying."¹⁸ Because of their popularity with teens and their potential for widespread impact, electronic media have the potential to be powerful influences in adolescents' lives. The challenge for developers of prevention interventions is to harness electronic media to change behavior in a prosocial rather than antisocial direction.

Interactive computer-based multimedia interventions have been successful in teaching complex interpersonal and prevention strategies for health-related behaviors (eg, smoking, sexuality).¹⁹⁻²² Such technology-based approaches overcome many limitations inherent in traditional curriculum-based prevention approaches. One such limitation is that teachers generally make implementation decisions, including when and how certain information is disseminated to the students. Therefore, students rarely have control over what information and/or skills they receive, and a desire for privacy may make them reluctant to ask for information relevant to their personal situations.

The necessity of teacher training for traditional classroom-based prevention interventions presents another limitation. Because many curricula are based on interactive teaching strategies and an information base that may be unfamiliar to many classroom teachers, teacher training is a critical variable

in the success of implementation. In spite of the best training, which is both time and resource intensive, individual teachers may be inconsistent in their implementation of a prevention program.

Several features unique to computer-based technology can overcome the variability inherent in teacher-controlled interventions by allowing for user control, personalization, flexibility, open access, and anonymity. Through branching capabilities, the flow of the software can be determined by the user's input, so as to lead directly to the information most relevant to his or her situation or concern. These flexible interaction patterns between the user and the software allow students to practice skills or review information as often as they wish. Additionally, after practicing, users can return periodically for a refresher or to learn new skills. Finally, students can access information when it is most relevant to them, rather than being bound by a teacher's decision about the timing of conflict-management lessons or the availability of peer mediators, for example.^{23, 24}

A model for the use of such interactive technology in the prevention field is BARN (Body Awareness Resource Network), which provides adolescents with information about AIDS, alcohol and other drugs, human sexuality, smoking, stress management, and body management (nutrition and exercise) in a confidential and nonjudgmental manner. This multimedia program, which includes computer games, risk assessments, and interactive interviews and simulations, provides adolescents with the information and decision support they need to make informed lifestyle decisions. Evaluation data revealed that, after 2 years of BARN availability, BARN users in comparison to non-BARN users, were slower to initiate risk-taking behaviors, progressed through common adolescent alcohol and drug transitions more slowly, and were more likely to use effective contraception and to quit smoking (if they were light smokers).²¹ Similar findings were reported from an evaluation of interactive videodiscs designed to reduce HIV/STD risk behaviors. In that study, researchers found that use of a short-term

multimedia intervention was effective in changing attitudes, intentions, and self-efficacy related to sexual behaviors 1 month following the intervention.²⁵

The purpose of the present study was to assess the effectiveness of an intervention modeled after the successful BARN system, SMART Talk (Students Managing Anger and Resolution Together). This computer-based multimedia program was designed to teach adolescents how to resolve interpersonal issues without violence.²⁶ Grounded in social learning theory,²⁷ Dreyfus and Dreyfus' stages of skill development,²⁸ and Aggression Replacement Training (ART),²⁹ SMART Talk has 3 major components: Anger Management, Perspective Taking, and Dispute Resolution.²⁶

Table 1 describes each component in detail. The first component (Anger Management) uses animation, interactive assessment interviews, and games to teach students to recognize the cycle of anger (What's Anger?) and to identify situations in which they are likely to become angry (Triggers and Fuses). They are also taught strategies for handling anger and conflict (Anger Busters and Channel Surfin'). In the second component (Perspective Taking), students are challenged to view anger-producing situations from the perspectives of all participants in the situation, through a game format (What's on THEIR Mind?). SMART Talk also includes interviews with high school peer mediators and celebrities to give students a sense of how role models manage conflict (Teen Talk and Celebrity Interviews). The final component (Dispute Resolution) is an interactive mediation process (Talking It Out) that guides disputing students to generate solutions to their conflict, solutions that are incorporated into a printed contract.

METHOD

Data were collected in a large middle school comprising 6th, 7th, and 8th grades in the spring of 1995. The study site was located within 10 miles of the heart of a major midwestern metropolis and had

an economically diverse population. Twelve percent of the student population was bused from the inner city, due to a desegregation plan, and 20% came from a nearby low-income rural area within the district boundaries.

At the beginning of every school year, students are randomly placed into teams for their academic classes. Each grade has 3 teams of 100 to 140 students each. Within the school, the classrooms for each team are clustered around a team planning room such that students in 1 team have little or no interaction with students in other teams during the school day. For evaluation purposes, 2 teams in each grade were randomly assigned to the intervention group and 1 team to the control group. Assignment was done at the team level, rather than at the individual level, to minimize contamination that would have resulted from intervention and control participants attending classes together.

Participants

Parent permission forms were sent to the homes of all 1361 students registered at the school, and 700 (51%) were returned. Of those, 142 denied permission, thus leaving a sample of 558. Of those 558 student participants, 54% ($n = 300$) were girls, and 46% were boys ($n = 258$), with 42% being 6th graders ($n = 232$); 31%, 7th graders ($n = 173$); and 27%, 8th graders ($n = 153$). Approximately 84% were Caucasian ($n = 468$); 9% ($n = 52$) were African American; 4% ($n = 19$) were biracial; and 4% ($n = 19$) reported other racial backgrounds. Forty-nine percent ($n = 271$) were currently living with 2 biological or adoptive parents (2 parents, no stepparents), 20% ($n = 113$) were living with 2 parents, one of whom was a stepparent; 28% ($n = 157$) reported residing with a single parent; and the remaining 3% ($n = 17$) reported other living arrangements (eg, grandparents, foster care). In addition, 29% of the

study participants were receiving free or reduced-price lunch, and 18% had Chapter I status, indicating qualification for remedial support.

To determine the representativeness of the study sample, chi-square analyses were conducted to test differences on relevant demographic variables (ie, gender, grade, race, and zip code) between the 558 study participants and those students who did not participate in the research. In addition, chi-square analyses were calculated to evaluate the difference between study participants and the entire student population (ie, all 6th – 8th-grade students) on the same demographic variables. A significant difference between study participants and nonparticipants was found only for the distribution of grade; approximately 42% of the study participants were 6th graders, whereas 25% of the nonparticipants were 6th graders. No other significant differences were found between study participants and nonparticipants or between the study participants and the entire student population.²⁶

Students in the intervention and control groups completed a survey before the intervention and 4 months later.³⁰ The survey measured demographic, psychosocial, and environmental factors; aggressive and other violence-related behaviors; and satisfaction with SMART Talk. Although most items were derived from previously published materials, some were developed by the project investigators based on results from focus groups.²⁶ The survey was administered by project staff during an early-morning free period followed by 2 makeup days.

Of the 558 students who completed the initial survey, 538 also completed the follow-up survey. Three students refused to take the postsurvey; 13 students had moved; 3 had been expelled from school; and 1 had a severe medical condition. In addition, survey monitors identified 3 students who answered the survey items randomly at pretesting. At posttesting, 16 additional students were removed from the panel for the same reason, leaving 519 students. To determine the extent of contamination or

crossover between the experimental and control groups, we set out to confirm that members of the intervention group had used the computer and that the control subjects had had no access to the computer. Thirteen students in the intervention group self-reported that they did not use the computer, and indeed, we found no computer-collected data on them. Because these students interacted with other students in the intervention group on a daily basis and were likely to have had conversations with classmates about the program, data from these students were included. However, 3 students in the control group were removed from the panel because they reported computer use that was verified by computer records. Thus, the final panel consisted of 516 participants, of whom 321 were in the intervention group and 195 in the control group (Table 2).

Students in the intervention group had access to SMART Talk during the spring semester (January to April 1995). Computers with SMART Talk software were located in the team planning room adjacent to each team area. Students used SMART Talk independently during class time for some classes or during free time. With the exception of 17 pairs of students who were assigned to use SMART Talk to resolve specific conflicts, student use was voluntary and was not connected to an assignment or to classroom work.

Measures

Five outcome measures were selected for analysis because of their hypothesized association with violence in the research literature: self-awareness,²⁹ beliefs supportive of violence,³¹ self-efficacy,³² intentions to use nonviolent strategies,^{33,34} and aggressive behavior.³⁵ Development of the study measures involved a systemic instrument development process. First, a comprehensive review of the extant literature revealed measures for beliefs supportive of violence and aggressive behavior that were modified for this investigation. Other study measures were developed specifically for this evaluation, and

items were generated that related clearly to the construct of interest (eg, intentions to use nonviolent strategies). Second, each scale was presented to a panel of experts in violence prevention for content validation. Third, all measures were given to groups of middle school students for their review. Based on the results from those student groups, items were modified for clarity and readability, and an exploratory factor analysis was conducted for all study measures. Factors were extracted based on eigen values, percentage of variance explained, and examination of scree plots. Items that had factor loadings above .50 and those items that did not have cross-loadings above .30 on any other factor were retained. Finally, these measures were further evaluated in a pilot investigation of the SMART Talk program.³⁶

Self-awareness. Students rated their level of agreement with 6 statements (examples: “I know how to calm myself down when I get angry”; “I can look at a conflict situation in many different ways”). Responses ranged from (1) Strongly Disagree to (5) Strongly Agree, and total scores ranged from 6 to 30. Cronbach alphas were 0.70 and 0.71 for pre- and postsurvey data respectively. The higher the score, the greater students’ self-awareness.

Beliefs supportive of violence. To assess beliefs supportive of violence, 6 items were adapted from the University of Texas Health Science Center Aggression Scale.³⁷ The scale included statements such as “I don’t need to fight because there are other ways to deal with being mad”; “It’s okay to hit someone who hits you first”; “If I really want to, I can usually talk someone out of fighting with me.” Responses ranged from (1) Strongly Disagree to (5) Strongly Agree, and total possible scores ranged from 6 to 30. Cronbach alphas were 0.71 and 0.70 for pre- and postsurvey respectively. The higher the score, the stronger students’ beliefs supportive of violence.

Self-efficacy. Five items measured confidence in using nonviolent strategies; in these items the respondent was asked how confident he or she was in, for example, “Staying out of fights,” “Calming down when mad,” and “Talking out a disagreement.” Responses ranged from (1) Not At All Confident to (5) Very Confident, and possible scores ranged from 5 to 25 with Cronbach alphas of 0.85 for both pre- and postsurveys. The higher the score, the higher students’ sense of self-efficacy.

Intentions to use nonviolent strategies. Eight items measured respondents’ intentions to use nonviolent strategies in a future conflict. Example items included: “Ignore the situation,” “Try to talk it out,” “Suggest peer mediation,” “Try to reduce your anger,” and “Try to see the other person's point of view.” Responses ranged from (1) Very Unlikely to (4) Very Likely. Total possible scores ranged from 8 to 32, and Cronbach alphas were 0.63 at pre- and posttesting. The higher the score, the greater students’ intentions to use nonviolent strategies.

Aggressive behavior. Self-reported aggressive behavior was measured with 4 items from the University of Texas Health Science Center Aggression Scale³⁷ and 3 items, from the Conflict Tactic Scale.³⁸ Students were asked how often, in the past 30 days, they “Hit back when hit first”; “Pushed, slapped, shoved, or kicked other students”; “Got into a physical fight when angry”; and “Threatened to hurt or to hit another student.” In addition, students were asked how often they did the following when in a conflict: “Pushed, grabbed, or shoved”; “Hit or tried to hit but not with an object”; and “Hit or tried to hit with an object.” Response choices included (1) No Opportunity or Never to (4) 5 or More Times. Total scores were created by summing across all items, with higher scores indicating greater self-reported aggression. Scores ranged from 7 to 28 with Cronbach alphas of 0.86 and 0.88 calculated for pre- and posttest data respectively.

In addition to these scales, students were asked for demographic data and for their reactions to using SMART Talk.

The predictive power of our study measures to explain aggressive behavior was examined during the pretest survey. This was done to insure that the study variables were indeed associated with aggressive behavior. In a regression analysis, Self-Awareness, Beliefs Supportive of Violence, Confidence, and Intentions scale scores were entered as independent variables predicting scores on the Aggressive Behavior scale. These variables together accounted for 45% of the variance in aggression scores, and Confidence in Using Nonviolent Strategies was the strongest predictor of aggression ($\beta = -.44$; $p < .001$), with greater confidence being associated with less aggression. In contrast, Beliefs Supportive of Violence was positively associated with aggression ($\beta = .22$; $p < .001$), indicating that beliefs supportive of violence were associated with greater levels of aggressive behavior. Intentions to Use Non-violent Strategies was also associated with less aggression ($\beta = -.10$; $p < .05$). Self-Awareness was not associated with aggressive behavior once these other factors were taken into account. Thus, these results indicate that the study variables selected are important factors associated with aggressive behavior.

Data Analysis

Preliminary analyses were conducted to determine baseline equivalency between the participants in the intervention and control groups. This was followed by descriptive analyses of several important survey questions relevant the study and computer-use data. A repeated measures MANCOVA was calculated to evaluate the impact of the intervention on study variables between pre- and posttesting.

Additional multivariate analyses evaluated whether the impact of the intervention varied as a function of participants' grade level or gender. Finally, participants were asked to evaluate the computer program.

RESULTS

Baseline Equivalency

Demographic information on the 2 groups at baseline appears in Table 2. No significant differences in the gender makeup of the 2 groups were found ($\chi^2 [1] = .05, p > .05$). The ethnicity of students ($\chi^2 [1] = .74, p > .05$) and the percentage of students receiving free or reduced-price lunch ($\chi^2 [1] = .02, p > .05$) were equivalent between the intervention and control groups. A significant difference was found in the distribution by grade of the 2 groups. Students in the intervention group were fairly evenly distributed across the grades, whereas the control group had a disproportionate number of 6th-grade students ($\chi^2 [1] = 22.33, p < .001$). To control for the group difference on this variable, we covaried the effects of grade out of all pre-to-post group comparisons.

Analyses were also conducted to examine whether the treatment and control groups differed on the 5 dependent measures at baseline, using multivariate analysis of variance (MANOVA) with group as the independent variable. The overall MANOVA showed no significant effect for Group (Wilks' Lambda = .98, $F(5, 510) = 1.94, p > .05$), indicating that the groups did not differ significantly in their levels of self-awareness, beliefs supportive of violence, self-efficacy, intentions to use nonviolent strategies, and aggressive behavior at pretesting.

Preliminary Analysis

Baseline data indicated a need for intervention. For example, 63% of the students reported that they could get a gun easily, and 59% did not feel safe in their neighborhoods. Twenty-four percent of the sample had been personally affected by violence in the past 30 days. When in a conflict situation, 45%

of the sample reported that they threatened to hit the other party, and 46% reported that they had actually hit someone. Fifty-six percent reported getting into trouble in school, 14% reported getting into trouble in the community, and 88% reported having damaged or destroyed property, all in the past 30 days.²⁶

Twenty-nine percent of the students reported engaging in frequent bullying behavior, and 38% had high scores on the aggression scale. Although bullying and fighting were common, nearly half of the sample (48%) also had a high incidence of caring behaviors, such as helping a student with schoolwork or listening to someone who was upset.

Use Data

During the 13 weeks that SMART Talk was available, data on each user's path through the program were collected unobtrusively by the computer. Slightly more than 80% used SMART Talk with a partner, 10% used the computer alone, and another 10% used it both alone and with a friend. On the posttest questionnaire, students were asked how many times they used each of the 3 components. On average, students reported 8.4 uses of those components with high levels of interaction, such as games and interviews (eg, Triggers and Fuses, Channel Surfin', What's on THEIR Mind?, and Talking It Out), and 4.5 uses of those with lower levels of interaction (eg, Understanding Anger, Anger Busters, and Celebrity Interviews). There were no differences in use rates of these programs between males and females and no differences attributable to grade.

Outcome Findings

The impact of the intervention on study measures was assessed with repeated measures multivariate analyses of covariance, conducted using a MANCOVA mixed design, with group as the between-subjects factor, time (pre, post) as the within-subjects factor, and grade as the covariate. Dependent variables included self-awareness, beliefs supportive of violence, self-efficacy, intentions to use nonviolent strategies, and aggressive behavior. The overall MANCOVA revealed no significant main effect for Group and no significant main effect for Time. The overall MANCOVA revealed a significant effect for the crucial interaction term of Group X Time, Wilks' Lambda = .97, $F(5, 510) = 2.81$, $p < .05$, $\eta^2 = .03$, indicating that the change in the study measures over time varied by group. Follow-up univariate analyses revealed significant Group X Time interactions for intentions to use nonviolent strategies $F(1, 514) = 8.67$, $p < .01$, $\eta^2 = .02$ and beliefs supportive of violence, $F(1, 514) = 5.64$, $p < .05$, $\eta^2 = .01$ (Table 3). The Group X Time interaction for self-awareness revealed a marginally significant difference between the 2 groups, $F(1, 514) = 3.35$, $p < .10$, $\eta^2 = .01$. There were, however, no significant changes in the frequency of aggressive behavior over time between the intervention and control groups. Inspection of the means for the 2 groups indicated that the significant differences represent a slight increase among intervention students in their intentions to use nonviolent strategies with a corresponding decrease in intentions for students in the control group (Table 3). Students in the intervention group were also less likely to value violence as a solution to a conflict when compared to their peers in the control group. Although only marginally significant, there was a difference in self-awareness, with students in the intervention group reporting a slight increase in their level of self-awareness about their response to anger when in conflict situations whereas students in the control group evidenced a slight decrease.

The extent to which these significant changes varied by gender and grade was examined. Gender effects were assessed using a MANCOVA mixed design, with group and gender as between-subjects factors; time (pre, post) as the within-subjects factor; and grade entered as a covariate (see Table 4). Grade effects were then evaluated using a separate MANOVA mixed design, with group and grade as between-subjects factors, and time (pre, post) as the within-subjects factor (see Table 5). In both designs, the dependent variables included self-awareness, beliefs supportive of violence, self-efficacy, intentions to use nonviolent strategies, and aggressive behavior. The overall MANCOVA for the Group X Time X Gender interaction was not significant (Wilks' Lambda = .99, $F(5, 508) = .82$, $p < .05$, $\eta^2 = .01$), nor was the Group X Time X Grade interaction. No significant differences were found for ethnicity or lunch status, indicating that these factors did not affect the efficacy of the intervention.

Additional analysis of survey questions related specifically to the components and modules of SMART Talk revealed that students reacted positively to the program: Eight-seven percent of SMART Talk users reported learning many ways to solve a conflict; 86% were able to identify their "triggers" and "fuses"; and 84% stated they were more aware of how to solve conflicts. In addition, 81% of users found the program enjoyable; 75% reported learning a lot; and 77% indicated they would recommend SMART Talk to a friend.

LIMITATIONS

This study had several limitations that should be considered when interpreting the results. First, the results are based on self-report data, which are subject to well-documented limitations, such as social desirability biases and recall biases. Second, the sample is predominantly white, and therefore, the results might not generalize to other, more ethnically diverse populations. However, the self-reported

levels of anger and aggressive behavior in this sample were comparable to levels found in studies that included more diverse populations.² Third, exposure to SMART Talk was limited to 1 semester. The overall impact of SMART Talk might be increased if students had longer exposure to the intervention, perhaps taking place over an entire school year rather than a semester. Additional time would allow for multiple uses of the program and for use at the time of a conflict. Those students who used the mediation module after a conflict situation reported the session with SMART Talk useful and instrumental in reaching a positive resolution of their conflict. Fourth, although some group differences were statistically significant, the differences were small and might have limited practical significance; these findings are, however, consistent with other research in the prevention field. Overall, a systematic trend was observed among SMART Talk users toward decreasing negative behaviors and increasing positive ones. Such a trend was not seen for the nonusers. In addition, the evaluation of SMART Talk was limited to a pre- and posttest design. Violence prevention researchers³⁵ recommend that outcomes be measured again 6 months after completion of the intervention because behavioral change may not occur immediately following exposure. Human subjects and funding limitations precluded a longer follow-up period within this sample, however.

Finally, although students were assigned to the treatment conditions at the team level, individual students were the unit of analysis because the intervention was implemented in only 1 school and there was not sufficient power to conduct analysis at the team level. Subsequent evaluations of the SMART Talk program need to include many schools in order that its effectiveness using multilevel modeling techniques (eg, HLM) to account for individual, classroom, and school effects might be determined.

DISCUSSION

SMART Talk multimedia computer software combines theoretically grounded violence- prevention strategies with a medium that is popular and engaging to adolescents. Focusing on anger management, social-skills development, and dispute resolution, SMART Talk provides adolescents with a confidential, engaging resource to help them deal with conflict situations. This study has demonstrated both SMART Talk's appeal to students and its potential as a prevention tool.

Violent behavior does not occur randomly or without antecedents—an identifiable causal chain of cognitive variables leading to violence exists. Included in this causal chain are factors such as attitudes and beliefs about violence, awareness of nonviolent responses, intentions to use nonviolent strategies, and environmental influences. Changing an individual's behavior requires modifying the many factors that influence it. Although these results do not show a significant change in aggressive behavior, the finding of small but significant changes in self-awareness, attitudes, and intentions to use nonviolent strategies in conflict situations indicate a positive effect on critical mediating variables. Even a relatively small dose of SMART Talk influenced 3 of the critical factors related to behavior change, which is an important first step in helping youth make safer and healthier decisions in conflict situations.

Although traditionally males have made more use of technology than have females, the current study found no differences in outcome for males and females. No differences were seen by grade, family income level (as measured by eligibility for free or reduced-price lunches), or ethnicity either. Thus, multimedia computer software appears to be an effective method to provide both information and skills-building practice for all middle school students.

Since the introduction of computer-based interventions into public schools in the late 1970s, many have argued that such interventions have the potential to make a significant contribution to the field of

prevention.^{19, 20} Because of the serious impact of violent behavior on young people, their families, and entire communities, traditional classroom pedagogy is no longer a sufficient strategy for providing information and skill-building activities. Developers of prevention strategies are challenged to engage students who are surrounded by sophisticated electronic media. The messages in SMART Talk counter the messages given in much of the teen-oriented entertainment mass media. Although prevention information and skills are not unique to SMART Talk, the medium of computer software is a unique delivery method with the potential to engage a population at risk for violence that may be disenfranchised from traditional prevention approaches.

Although this study demonstrates the potential for use of multimedia computer software as a tool for universal prevention, further research is needed to determine the settings in which this approach might be appropriate. In this initial test of SMART Talk, all populations in a middle school with a diverse student body benefited equally from this universal intervention. Would targeting high-risk students, students actively engaged in conflict or adolescents who have committed some violent act result in increased effects? In this study, the majority of students were free to use the software at their own discretion during the semester it was available. What would be the impact of targeting students at high risk for disputes and requiring them to use SMART Talk?

This study demonstrates that SMART Talk has some efficacy in changing adolescents' beliefs and intentions regarding use of violence. Further research is needed, however, to determine whether length of use or parameters of use might influence outcomes, particularly with regard to aggressive behavior.

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TABLE 1
Descriptions of SMART Talk Program Components

Module	Description
<u>Anger Management</u>	
What's Anger?	Didactic presentation of ART model
Triggers and Fuses	Interactive interview: User identifies own triggers and fuses (assessment).
Anger Busters	General guidelines for dealing with an angry person or an anger-producing situation and specific strategies for de-escalating angry situations. Opportunities for practice included.
Channel Surfin'	Capstone game in which all anger-management skills are practiced in authentic situations, such as being pushed in the hall, hearing rumors about oneself, having something taken from one's locker.
<u>Dispute Resolution</u>	
Talking It Out	Interactive interview: Two disputants walk through a mediation process. Contract of agreement is printed for users. Can be used by 1 or 2 students.
Teen Talk	Four high school students relate their experiences as mediators.
<u>Perspective Taking</u>	
Celebrity Interviews	Four celebrities describe how they resolve conflict and manage the stresses of interpersonal relationships.
What's on THEIR Mind?	In game-show format, users identify various reasons underlying an action to help them better understand other perspectives.

TABLE 2
Demographics of Intervention and Control Participants: Gender, Grade, Race, & Lunch Status

	Group		χ^2
	Intervention (n = 321)	Control (n = 195)	
	<u>n (% of group)</u>	<u>n (% of group)</u>	
Gender			
Male	146 (45%)	90 (46%)	0.05
Female	175 (55%)	105 (54%)	
Grade			
6th	108 (34%)	106 (54%)	22.33*
7th	114 (35%)	42 (22%)	
8th	99 (31%)	47 (24%)	
Race			
Caucasian	270 (84%)	166 (85%)	0.74
Black	29 (9%)	17 (9%)	
Biracial	10 (3%)	4 (2%)	
Other	12 (4%)	8 (4%)	
Lunch Status			
No Reduction	228 (71%)	141 (72%)	0.02
Free or Reduced	92 (29%)	55 (28%)	

*p < .001

TABLE 3
Means and (Standard Deviations) on Outcome Variables for Students in Intervention and Control Groups, Univariate Analysis of Covariance F Tests for Group X Time Interactions

Scale	Group (N = 516)				F ^a
	Intervention Group (n = 321)		Control Group (n = 195)		
	Pre	Post	Pre	Post	
Awareness	23.75 (3.76)	23.90 (3.94)	23.98 (4.06)	23.39 (4.26)	3.35*
Beliefs	17.69 (4.15)	17.21 (3.69)	17.04 (4.64)	17.46 (3.90)	5.64**
Efficacy	22.82 (4.87)	23.32 (5.01)	22.77 (5.29)	22.94 (5.32)	0.66
Intentions	19.11 (4.37)	19.51 (4.55)	19.93 (4.85)	19.16 (4.78)	8.67***
Aggression	14.98 (5.64)	14.98 (5.80)	15.06 (5.91)	15.27 (6.17)	0.19

Note. Grade was entered as a covariate in these analyses. Awareness = Self-awareness; Beliefs = Beliefs supportive of violence; Efficacy = Confidence in using nonviolent strategies; Intentions = Intentions to use nonviolent strategies; Aggression = Aggressive behavior.

^a F-values for Group X Time (Pre, Post) Interaction.

* p < .05, ** p < .01, *** p < .001

TABLE 4
Means and (Standard Deviations) on Outcome Variables for Male and Female Students in Intervention and Control Groups, Univariate Analysis of Covariance F Tests for Group X Time X Gender Interaction

Scale	Intervention Group ($\underline{n} = 321$)				Control Group ($\underline{n} = 195$)				\underline{F}^a
	Males ($\underline{n} = 145$)		Females ($\underline{n} = 176$)		Males ($\underline{n} = 90$)		Females ($\underline{n} = 105$)		
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
Awareness	23.48 (3.56)	23.21 (4.16)	23.97 (3.91)	24.47 (3.46)	23.61 (4.25)	23.12 (4.36)	24.29 (3.87)	23.64 (4.18)	.18
Beliefs	18.53 (4.15)	17.88 (3.67)	16.99 (4.03)	16.66 (3.61)	17.99 (4.75)	18.23 (4.34)	16.23 (4.41)	16.80 (3.34)	1.52
Efficacy	22.12 (5.13)	22.81 (5.56)	23.40 (4.57)	23.74 (4.47)	21.70 (5.15)	21.87 (5.31)	23.70 (5.26)	23.86 (5.19)	1.35
Intentions	18.35 (4.75)	18.79 (5.09)	19.73 (3.95)	20.29 (3.97)	18.61 (4.71)	18.41 (4.89)	21.05 (4.69)	19.81 (4.62)	.66
Aggression	15.88 (5.92)	16.14 (6.23)	14.24 (5.32)	14.03 (5.25)	16.64 (6.32)	16.89 (6.46)	13.71 (5.18)	13.87 (5.58)	.00

Note. Grade was entered as a covariate in these analyses. Awareness = Self-awareness; Beliefs = Beliefs supportive of violence; Efficacy = Confidence in using nonviolent strategies; Intentions = Intentions to use nonviolent strategies; Aggression = Aggressive behavior.

^a F-values for Group X Time (Pre, Post) X Gender interaction. All F-values were nonsignificant.

TABLE 5
Means and (Standard Deviations) on Outcome Variables for 6th – 8th Grade Students in Intervention and Control Groups, Univariate Analysis of Covariance F Tests for Group X Time X Grade Interaction

Scale	Intervention Group (<u>n</u> = 321)						Control Group (<u>n</u> = 195)						<u>F</u> ^a
	6th Graders (<u>n</u> = 108)		7th Graders (<u>n</u> = 114)		8th Graders (<u>n</u> = 99)		6th Graders (<u>n</u> = 106)		7th Graders (<u>n</u> = 42)		8th Graders (<u>n</u> = 47)		
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	
Aware	23.11 (3.71)	23.00 (4.42)	24.32 (4.01)	24.71 (3.50)	23.79 (3.41)	23.95 (3.68)	24.32 (3.94)	23.68 (4.42)	23.09 (3.58)	22.18 (3.46)	23.98 (4.64)	23.85 (4.41)	3.17*
Beliefs	17.68 (4.65)	17.00 (4.10)	17.64 (4.17)	17.05 (3.52)	17.75 (3.54)	17.62 (3.40)	16.27 (4.33)	17.05 (4.01)	19.36 (5.06)	18.21 (4.04)	16.71 (4.35)	17.71 (3.44)	1.82
Efficacy	21.79 (4.95)	22.47 (5.24)	23.41 (5.06)	23.57 (4.98)	23.27 (4.40)	23.96 (4.69)	23.45 (4.66)	23.58 (5.15)	19.91 (6.42)	20.36 (5.69)	23.81 (4.70)	23.81 (4.73)	.47
Intentions	18.75 (4.44)	18.75 (5.00)	19.64 (4.34)	20.19 (4.25)	18.88 (4.33)	19.53 (4.28)	20.61 (4.19)	19.62 (4.64)	17.99 (5.57)	18.56 (5.09)	20.10 (5.16)	18.68 (4.82)	.48
Aggression	15.94 (5.57)	15.68 (5.93)	14.61 (5.52)	14.66 (5.49)	14.36 (5.78)	14.61 (5.99)	14.26 (5.40)	15.33 (6.08)	17.56 (6.51)	16.24 (6.34)	14.64 (5.96)	14.26 (5.94)	2.43

Note. Awareness = Self-awareness; Beliefs = Beliefs supportive of violence; Efficacy = Confidence in using nonviolent strategies; Intentions = Intentions to use nonviolent strategies; Aggression = Aggressive behavior.

^aF-values for Group X Time (Pre, Post) X Grade interaction. * $p < .05$; but overall MANOVA was not significant.