

An Experimental Evaluation of an Internet-Delivered Conflict Resolution Skills Curriculum in a Secondary School Setting

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ABSTRACT. Given the Internet's capacity to reach a wide audience and recent increases in violence-related episodes among our nation's youth, Internet-delivered, interactive conflict resolution programs may prove to be a powerful tool to prevent the growing phenomena of adolescent violence. In this study, we tested the efficacy of an Internet-delivered conflict resolution program. Specifically, the program emphasizes the development of conflict management skills, which may decrease future use of violent tactics to manage conflict. One hundred ninety-eight 9th grade students from a large urban area high school (64 = control; 134 = experimental) participated in the study. Results indicated that students exposed to the conflict management program reported an increase in knowledge of conflict management skills and negative attitudes toward violence. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2005 by The Haworth Press, Inc. All rights reserved.]

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Youth violence has been at the center of our nation's attention in recent years, challenging schools and government officials to respond to this public health crisis (Mulvey & Cauffman, 2001). Responses have included the U.S. Department of Health and Human Services' (1990) recommendation that violence prevention or conflict resolution programs be implemented in schools as a means to combat this public ill as well as public policy initiatives, such as Safe Schools/Healthy Students (1998), granting school districts funds to implement programming that will decrease school violence. The aim of these programs is to instill in our nation's youth the attitudes, knowledge, and skills that will deter violence.

School-based programming can be a very efficient and effective means for delivering preventive interventions for a number of reasons. First, because of the classroom structure inherent in the school setting, school based programming can target a wide audience very efficiently and without much disruption to the organization of the school day. For example, a conflict resolution skills program could be offered to groups of students as an elective. Another reason school based programming may be a promising practice is because youth spend a majority of their time in school, with much of their development impacted by events occurring during the school day (Farrell, Meyer, Kung, & Sullivan, 2001). Adolescent exposure to conflict resolution skills programming during the course of their school day could translate to fewer episodes of violence, both at school and at home. Although high school is a time during which young men and women prepare for college and future careers, high school is also a time during which young adults are introduced to ideas and attitudes that will shape their development and influence the people they become. Ideas and attitudes that youth learn about conflict resolution while in high school may be internalized as normative processes for managing conflict in adulthood (Bickmore, 1999). Moreover, because some etiologic factors of youth violence reside within a school system (Herrenkohl et al., 2000), diffusing students during the school day with attitudes, knowledge, and skills that deter violence may result in more peaceful resolutions of conflict during the school day. Many people think of conflict as discord and disagreement. However, "conflict provides us with the greatest opportunity to learn, to see beyond our limited personal experience, to connect to others, to recognize our po-

tential, and to collaborate in generating new solutions to old problems” (Tobin, 2001). High school, in particular, may be an effective setting for teaching young men and women conflict resolution skills because it represents the threshold into adulthood, a time during which young people prepare for independence from family and home.

One standard means of implementing school-based conflict resolution and violence prevention programs involves delivery of a curriculum by teachers, counselors, or other trained professionals. The advantage to this type of curriculum delivery is that it is effective in targeting a large group of students at one administration. However, it necessitates the use of personnel resources for each administration, which means increased cost with increased dosage. Furthermore, it does not adequately ensure individual students practice opportunities needed to effectively use conflict resolution knowledge and skills learned (Bosworth, Espelage, & Dubay, 1998). One way to overcome these limitations may be to employ an effective school-based conflict resolution program delivered via the Internet. An Internet-delivered program would require initial resources for program development, empirical validation, and World Web accessibility. Once available, however, this program would be efficient and cost effective, minimizing personnel resources needed for program administrations and availing itself to many students at one time through group administrations. Additionally, program delivery via the Internet permits interactive delivery of the curricula. For example, an Internet-delivered program could incorporate mock conflict situations. This would allow students to gain virtual experience practicing knowledge and skills learned during the program administration.

CONFLICT-MANAGEMENT EDUCATION

KnowConflict’s (<http://www.knowconflict.com/>) Conflict Management Education Program is an Internet-delivered conflict management program for high school students. The program’s genesis emerged from the ashes of Columbine and is based on the precedent that the conflict management skills of our nation’s youth can be enhanced through deliberate psychology-based education delivered over the Internet.

The KnowConflict curriculum includes training modules based on the conflict-resolution paradigm developed by the Harvard Negotiation Project (<http://www.pon.harvard.edu/research/projects/hnp.php3>). The curriculum derives from strategies well known and validated in the professional and scientific literature. For example, central to the curriculum is the prem-

ise of principled negotiation, which suggests that most conflicts can be converted into win-win situations. KnowConflict teaches students how to transform conflict with peers, teachers, and parents into win-win situations, and then encourages the students to continue to develop win-win attitudes and strategies. Specific conflict resolution skills regarding principled negotiation include anger management, rational thinking, active listening, assertiveness (as opposed to aggressiveness), understanding one's own interests and positions, positive communication, and decision-making skills. Conflict-resolution knowledge and skills taught throughout the program are reinforced through the use of real life scenarios and are designed to provide the students with practical examples of problems and solutions.

In particular, the KnowConflict curriculum was constructed to foster conflict resolution skills among our nation's youth by facilitating communication with teachers, counselors, parents, and peers. To accomplish this, students are guided through a series of eight interactive lessons, with each lesson making liberal use of audio and video modeling, to develop mastery of the requisite skills. Each lesson is designed to address a series of objectives that, together, provide the skills necessary to deal with basic conflict issues. For example, while the foci of Lessons 1 and 2 are principled negotiation strategies, Lessons 3 and 4 focus on teaching anger management skills and the use of rational thinking in conflict resolution. Through the use of interactive scenarios, irrational thoughts underlying rage are exposed in standard cognitive behavioral fashion, and coping skills and rational trains of thought are substituted instead. Positive communication strategies, such as listening and assertiveness (as opposed to aggressiveness), are taught in Lessons 5 and 6, followed by constructive decision-making skills in Lesson 7. The program's closing session, Lesson 8, is comprised of a collection of interactive scenarios requiring students to practice skill integration and use the knowledge they've learned from the program. Each lesson concludes with an assessment reviewing and reinforcing lesson-specific knowledge and skills. Additional training materials are made available to parents and teachers in the spirit of increasing students' connectedness to schools as a way to reduce their propensity for violence (Crawford & Bodine, 1996).

PURPOSE OF STUDY

The purpose of this study was to evaluate the effectiveness of a pilot of KnowConflict's Internet-delivered conflict resolution intervention administered to a sample of inner city high school students. The hypoth-

esis is that students participating in the KnowConflict program, compared to a no-dose control group, will demonstrate significant increases in knowledge and skills instrumental in the implementation of principled negotiation conflict resolution strategies. Additionally, students receiving the program should develop significantly healthier attitudes about avoiding the use of violence as a means to resolve conflict. Finally, the effects of the program are expected to be stable across time and robust regardless of participant gender.

METHOD

Overview

One hundred ninety-eight 9th grade students from a large urban area high school participated in the assessment of the effectiveness of Know Conflict's Internet-delivered conflict-resolution intervention. The Know Conflict program was administered as part of the high school curriculum to the assenting students, each of whom had obtained parental consent to participate. Students were randomly assigned to either the treatment or control condition, with approximately 70% of participating students randomly assigned to experimental and 30% of participating students randomly assigned to control. The experimental condition received 134 participants (81 females; 48 males), all of which completed pretest assessments, 85 of which completed all immediate post-test items, and 37 of which completed delayed post-tests. In the control condition, 64 students (22 female; 42 male) participated in both pretest and post-test assessments. To preserve student anonymity, gender was the only demographic information collected.

Procedure

Prior to the experimental students' participation in the program, students in both experimental and control conditions completed a measure on attitudes towards violence, as well as an initial assessment of knowledge and skills instrumental in principled negotiation conflict resolution strategies. Next, during the course of eight weeks, students in the experimental condition received a weekly treatment of one of eight online lessons. Each of the lessons was administered to the experimental group sequentially every week in a group setting. Each lesson was accompanied by an immediate post-test of the knowledge and skills

gained from exposure that that day's lesson. The sum of these individual immediate post-tests constituted the measurement of the experimental group's post-test knowledge. Students in the control group received no lessons during the eight-week period. However, concurrently with the experimental group's completion of the last lesson of the program, control group participants completed the same knowledge and skills measure that was administered before the treatment began. This constituted the control group's immediate post-test measure of knowledge. At this time, the control and experimental groups also took an immediate post-test assessment of their attitudes regarding violence. One month after the administration of Lesson 8 of the curriculum, a subgroup of participants in the experimental group completed a delayed post-test administration of dependent measures.

Measures

Attitudes Towards Violence. The eight-item Aggressive Response to Shame subscale of the Attitudes Towards Guns and Violence Questionnaire (AGVQ) constituted the measure of attitudes towards violence (Shapiro, Dorman, Burkey, Welker, & Clough, 1997). This subscale was found to a reliable (Cronbach's $\alpha = .83$), single factor (23% variance) of the AGVQ in a previous study (Shapiro et al., 1997). This eight-item subscale was administered before the program was completed, immediately after the program was completed, and again approximately one month after program completion. Items included such statements as: "If somebody insults you and you don't want to be a chump, you have to fight," and "I'd feel awful inside if someone laughed at me and I didn't fight them." Response choices were *disagree*, *not sure*, and *agree*. Attitude items for the pretest, posttest, and delayed posttests were very reliable ($\alpha = .80, .89$, and $.90$, respectively), with higher scores indicating healthier attitudes about refraining from violence.

Conflict Resolution Knowledge and Skills. Conflict resolution knowledge and skill items were developed by curriculum developers and project investigators. There were 43 items consisting of true/false statements, such as "Hard approaches to conflict include verbal as well as physical aggression" and "Assertive Communication is intimidating, or hostile and demeaning to others." For the experimental group's immediate post-test, these items were evenly distributed across the first seven lessons; seven items accompanied Lesson 4, and six items accompanied

the remaining six lessons. Cronbach alpha coefficients at pretest, post-test, and delayed post-test for all knowledge and skill items were .60, .79, and .73, respectively. It was expected that, because the pretest assessed an initial, general level of knowledge, the items at pretest would not show a high reliability indicative of measuring a single concept. However, as the program progressed, these knowledge items were expected to represent a more formal concept of conflict resolution, thus increasing the reliability of the items over time, as was observed here.

RESULTS

Preliminary Analyses

Across the duration of the treatment, some respondents in the experimental condition attrited, thus affecting scores from the immediate post-test knowledge and attitude items administered after each lesson. Over the course of the program, participants completing each lesson-specific post-test decreased from 80% completion at Lesson 1 (N = 107) to 63% completion by Lesson 8 (N = 84). Attrition was taken into account by analyzing knowledge gain and attitude change using both intent-to-treat and lessons-completed models, so as to reflect program assignment, as well as completion of all immediate post-test items.

Knowledge Scores. Responses to knowledge items obtained during the pretest were scored and summed to create a single pretest knowledge score for each participant. In like fashion, aggregated immediate post-test and delayed post-test scores were also obtained for knowledge and skills. For the intent-to-treat analyses, missing items for the experimental group (due to attrition) were coded as 0, so that the aggregated immediate post-test score would reflect the participants' absences as no lesson-specific knowledge gained. The resulting knowledge scores had a possible range from 0, meaning no correct answers, to 43, signifying all correct answers.

Attitude Scores. The eight individual item scores for respondents' attitude assessments at pretest, immediate post-test, and delayed post-test were averaged to create single pretest, post-test, and delayed post-test attitude scores. Similar to the immediate post-test knowledge items for the treatment participants, missing items in the immediate attitude post-test were coded as 0 for the experimental group. The resulting attitude scores had a possible range from 0 to 8, with higher scores indicating a stronger belief that violence should not be used to resolve conflict.

Effect of Intervention on Knowledge Level

To evaluate the effectiveness of the program on knowledge acquisition, subjects in the control and treatment conditions were evaluated using a series of repeated measure analyses. To first analyze the control condition, a repeated measures ANOVA was performed for control subjects comparing pretest and immediate post-test knowledge scores. As expected, there was no significant difference between knowledge levels at Time 1 and Time 2 ($F > 1$), consistent with the absence of any treatment that would give these control subjects additional knowledge.

Intent-to-Treat Analysis. Knowledge gained by participants assigned to the treatment condition was evaluated with mixed-measures ANOVAs. First, pretest and immediate post-test knowledge scores were entered as within-subject measures, and gender was entered as a between-subjects factor. Treatment subjects had lower knowledge scores in the aggregated post-tests ($M = 21.26$) than at pretest ($M = 26.16$), most likely because of missing data due to absences (Greenhouse-Geisser $F(1, 127) = 28.68, p < .01$).¹ No gender effects were found ($F < 1$).

However, for those who completed delayed post-tests, the treatment condition resulted in increased knowledge from pretest to delayed post-test (Greenhouse-Geisser $F(1.26, 43.91) = 5.28, p < .05$). Specifically, in a mixed-measures ANOVA using pretest, immediate post-test, and delayed post-test as within-subject measures and gender as a between-subjects factor, the mean knowledge score at delayed post-test (28.9^B) was significantly higher than either the pretest (27.4^A) or immediate post-test (24.7^A) scores ($p < .05$). This effect was robust across gender ($F < 1$).

Lessons-Completed Analysis. The effects of treatment dosage were first evaluated with regression analyses. Immediate post-test knowledge scores were regressed onto the number of lessons completed in the program. Knowledge gained significantly related to lessons completed ($R^2 = .78, F(1, 123) = 479.1, p < .01$), in that knowledge increased as the number of completed lessons increased ($\beta = .89$). An analysis regressing delayed post-test scores onto the number of lessons completed yielded no appreciable variance ($F < 1$), indicating that number of lessons completed does not impact delayed post-test scores. Next, a mixed-measures ANOVA was run for those completing all 8 lessons only, with gender as an independent factor and pretest and immediate post-test knowledge scores as repeated measures.

Test measurement had a significant effect (Greenhouse-Geisser $F(1, 47) = 23.86, p < .01$), wherein knowledge scores at immediate post-test ($M = 30.3$) were higher than at pretest ($M = 27.2$). Gender effects were not found. Delayed post-test analyses were not run due to insufficient sample size.

Effect of Intervention on Attitudes Towards Violence

Intent-to-Treat Analysis. Program effectiveness on attitudes toward violence was first evaluated using a mixed-measures ANOVA with condition (control vs. treatment) and gender as independent factors and attitude pretest and immediate post-test scores as repeated measures. Results showed a strong main effect for condition ($F(1, 110) = 18.53, p < .01$), wherein treatment participants had higher attitude scores ($M = 6.35$) than did control participants ($M = 4.45$). In addition, condition and post-test attitudes significantly interacted. Specifically, attitudes in the experimental condition improved at post-test, whereas attitudes in the control condition slightly worsened at post-test (Greenhouse-Geisser $F(1, 110) = 5.14, p < .05$).² Table 1 shows these results. No gender effects were observed.

Next, a repeated-measures ANOVA was run for the experimental group only to assess delayed post-test attitudes. Pretest, immediate post-test, and delayed post-test attitude scores were entered as within-subject measures and gender was entered as a between-subjects factor. Results confirmed an effect for attitude measurement (Greenhouse-Geisser $F(1.05, 14.76) = 4.78, p < .05$). Subjects receiving the treatment had developed significantly healthier attitudes from pretest ($M = 6.21^A$) to immediate post-test ($M = 7.36^B$), and these attitudes were still present at delayed post-test ($M = 7.44^B$). No gender effects were found.

TABLE 1. Mean Attitude Towards Violence Scores at Pretest and Post-Test by Condition

Condition	Attitude Pretest	Attitude Post-Test
Experimental	5.96 ^A	6.73 ^B
Control	4.53 ^A	4.37 ^A

Note. Means are compared within condition only. Means with different superscripts differ significantly at $p < .05$ by one-tailed multiple t -test.

Lessons-Completed Analysis. Finally, the effects of treatment dosage on attitudes were evaluated. First, immediate post-test attitude scores were regressed onto the number of lessons completed in the program. Attitudes at immediate post-test were marginally significantly related to lessons completed ($R^2 = .07$, $F(1, 49) = 3.40$, $p = .07$), wherein negative attitudes toward violence increased as the number of lessons completed increased ($\beta = .26$). An analysis regressing delayed post-test scores onto the number of completed lessons showed no appreciable variation ($F < 1$).

Second, a mixed-measures ANOVA was run for those completing all lessons, with gender as an independent factor and pretest and immediate post-test attitude scores as repeated measures. Time of measurement had a significant effect (Greenhouse-Geisser $F(1, 25) = 5.42$, $p < .05$), in that attitude scores at immediate post-test ($M = 7.1$) were higher than at pretest ($M = 6.5$). No gender effects were seen. Sample size was insufficient for delayed post-test analyses.

DISCUSSION

Internet-delivered intervention programs, if validated through empirical testing, are a very effective means to deliver needed services because the programs can be disseminated to a wide audience at a low cost. Empirically-tested Internet-delivered school violence prevention programs are particularly exciting due to the increased need to address school violence, as well as the capacity schools may have to provide these services to many of their students. In fact, violence prevention and conflict-management curriculum may, in the future, become a required component of a more comprehensive education curriculum. The findings of this investigation are exciting because they demonstrate that conflict management knowledge, skills, and attitudes can be successfully taught via an interactive Internet-based program. Specifically, this study confirmed the effectiveness of the KnowConflict program in teaching a sample of inner-city high school students conflict resolution skills and effectively promoting prosocial attitudes against violence. These findings were robust across gender, suggesting that the program is equally effective for both males and females. One additional noteworthy point is that findings demonstrated that delayed post-test means for knowledge and skills were significantly higher than immediate post-test means, possibly suggesting that conflict resolution knowledge and skills, once learned, continue to be practiced in real life.

It should be recognized, however, that demographic data, such as age, ethnicity, and socioeconomic status were not collected, precluding analyses that would inform about the program's effectiveness across age, ethnic, or socioeconomic groups. Future research evaluating Internet-delivered violence prevention program effects, or specifically the efficacy of the KnowConflict conflict resolution program, should make a concerted effort to collect additional demographic information. Not only would these additional data test the effectiveness of Internet-based violence prevention programs across many groups, the data would also test the viability of Internet delivery for "hard-to-reach" populations. As such, the gains outweigh the costs of collecting these additional data (i.e., exchanging anonymity with confidentiality).

Also important to note, this study was conducted based on a pilot test of the KnowConflict conflict resolution program that was administered within a single population. Though the results of its effectiveness test are promising, multiple administrations of this program across different schools in different populations are needed to further evaluate the robustness of the program. If successfully generalizable, other schools may choose to adopt this program without need for modification, especially if cost effectiveness is a primary concern.

The field of prevention may be witnessing the advent of Internet-delivered prevention programs. At the threshold of this change is the promise of exciting times for those in the field of prevention that have a strong interest in the exportability of empirically-validated interventions. Despite the initial, justified excitement about an effective means to deliver prevention programs cost-effectively to a wide audience, we must exercise caution during this era of innovation and development. The public now has access to unlimited information, programs, and products on the Internet. Ethically and scientifically, it is imperative that internet programming and information available on the World Wide Web be held to the same level of empirical evaluation as programming and information delivered by professionals (i.e., counselors and teachers). Therefore, in our zest to join and contribute to the virtual community, we have an obligation to ensure the integrity of our work before we make it available to a wide audience without a mechanism of control. Indeed, the interactive and standardized nature of Internet interventions with opportunities for immediate feedback (such as with the KnowConflict conflict resolution program) engenders hope for significantly enhancing the reliability, validity, and clinical utility of Internet-delivered prevention programming.

NOTES

1. The sphericity assumption was violated for this condition, as indicated by Mauchly's Test of Sphericity (Mauchly's $W = .39$, $\chi^2 = 33.3$, $p < .01$). Thus, because the differences in variance for the pre-, post-, and delayed post-tests were not equal, the conservative Greenhouse-Geisser correction is reported for this analysis.

2. The sphericity assumption was violated for this analysis, as indicated by Mauchly's Test of Sphericity (Mauchly's $W = .39$, $\chi^2 = 33.3$, $p < .01$). Again, because the differences in variance for the pre-, post-, and delayed post-tests were not equal, the conservative Greenhouse-Geisser correction is reported for this analysis.

REFERENCES

- Bickmore, K. (1999). Teaching conflict and conflict-resolution in school: Extra-curricular considerations. In A. Reviv et al. (Eds), *How children understand war and peace: A call for international peace education* (pp. 233-259). San Francisco, CA: Jossey-Bass.
- Bosworth, K., Espelage, D., & Dubay, T. (1998). A computer-based violence prevention intervention for young adolescents: Pilot study. *Adolescence*, *33*(132), 785-795.
- Crawford, D., & Bodine, R. (1996). *Conflict resolution education: A guide to implementing programs in schools, youth-serving organizations, and community and juvenile justice settings*. Program Report, Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice.
- Farrell, A. D., Meyer, A. L., Kung, E. M., & Sullivan, T. N. (2001). Development and evaluation of school-based violence prevention programs. *Journal of Clinical Child Psychology*, *30*(1), 207-220.
- Herrenkohl, T. I., Manguin, E., Hill, K. G., Hawkins, J. D., Abbott, R. D., & Catalano, R. F. (2000). Developmental risk factors for youth violence. *Journal of Adolescent Health*, *26*(3), 176-186.
- Mulvey, E. P., & Cauffman, E. (2001). The inherent limits of predicting school violence. *American Psychologist*, *56*(10), 797-802.
- Safe Schools/Healthy Students Initiative (1998). Retrieved May 2002, from <http://www.mentalhealth.org/safeschools>.
- Shapiro, J. P., Dorman, R. L., Burke, W. M., Welter, C. J., & Clough, J. B. (1997). Development and factor analysis of a measure of youth attitudes towards guns and violence. *Journal of Clinical Child Psychology*, *26*(3), 311-320.
- Tobin, J. (2001). *Conflict management education: Essential skills for living*. Retrieved June 1, 2003, from http://www.knowconflict.com/cl_papers_conflict_management.html.
- U.S. Department of Health and Human Services (1990). *Healthy people 2000: National disease prevention goals and objectives*. Washington, DC: Public Health Service, National Institutes of Health.

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