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Violence Prevention Among African American Adolescent Males

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Abstract

Objective—To test psychosocial mediators of the effects of an intervention in reducing the rate of growth of violence among adolescents.

Method—Five hundred and seventy-one African American adolescent males participated in this randomized trial. Multilevel modeling techniques were used to ascertain both intervention and mediated effects.

Results—Intervention significantly reduced rate of growth of violence and 5 social and psychological factors in the treatment group relative to the control group. Four of these social and psychological factors were found to be complete mediators between the intervention and its preventive effects.

Conclusion—Changing psychological mediating variables is central to reducing youth violence.

Keywords

violence reduction; mediating variables; mediation mechanism; African American youth

Despite the overall steady decline in serious violence in the United States since 1993, the rates of violent behaviors for preadolescents, adolescents, and young adults remain at very high levels.¹⁻² Within the school-aged population, inner-city African American youths in the United States, especially males and those from low-income families, are most vulnerable to injury or death due to violence-related causes.³ These adolescents, therefore, constitute an important subgroup for violence prevention efforts. Many adolescents continue to disproportionately engage in multiple violence-related behaviors such as physical fighting, carrying weapons, threatening people (with and without weapons), and cutting, stabbing, and shooting other people.⁴⁻⁶

Physical fights, including those serious enough to require treatment by a doctor or a nurse, constitute a serious problem among youth, especially males. For example, the 1999 Youth Risk Behavior Surveillance (YRBS) report⁵ found that males were significantly more likely (44%) than females (27.3%) to have been in a physical fight one or more times in the 12 months preceding the survey. African American male students (7.1%) were significantly more likely

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than white male students (3.4%) to have been treated by a doctor or a nurse for injuries sustained in a physical fight in the 12 months preceding the survey.⁷

Weapon carrying among adolescents is known to be a significant contributor to youth violence. According to the 1999 YRBS report, 17.3% of high school and elementary students carried a weapon (gun, knife, or club) one or more times in the 30 days preceding the survey. Male students were nearly 5 times more likely to have carried a weapon than were female students (28.6% to 6%) and African American male students (16.3%) were significantly more likely than white male students (7.2%) to report carrying a weapon within 30 days of the survey.⁷ When students were specifically asked about carrying a gun in the 30 days preceding the survey, 4.9% of the students nationwide had carried a gun. Again, males were over 11 times more likely than females to have done so (9% to 0.8%). The rate of weapon carrying on school property was 6.9% nationwide. Male students were about 4 times more likely than females to have carried a weapon on school property (11% to 2.8%). Other national and local statistics^{8,9} on weapon carrying report similar significant differences between male and female students and between African American male and white male students.

With respect to actual threats of violence in US schools, both gender and race of students appear to be significant factors. For example, the percentage of students who had been threatened with a weapon on school property was 7.7% nationwide.⁵ Male students were almost twice as likely as female students to have been threatened with a weapon on school property (9.5% to 5.8%). African American male students (14.0%) were significantly more likely than white male students (8.2%) to have been threatened or injured with a weapon on school property one or more times during the 12 months preceding the survey.⁷

The Aban Aya Youth Project

The Aban Aya Youth Project (AAYP) was a longitudinal efficacy trial designed to compare 3 multiyear interventions: school-community program (SC), social development curriculum (SDC), and health enhancement curriculum (HEC). AAYP was implemented in grades 5 through 8 in 12 elementary schools in Chicago and the surrounding suburbs. The 2 experimental interventions, SDC and SC, focused on the risk behaviors of violence, substance use, and unsafe sexual practices, whereas the control intervention, HEC, focused on health-enhancing behaviors (physical activity, nutrition, oral health, and other self-care). The essential differences between SDC and SC were that the latter included (a) a parent support program to reinforce the curriculum skills and promote child-parent communication; (b) school staff and schoolwide youth support programs to integrate the intervention skills into its environment; and (c) a community program to forge linkages among the parents, schools, and local business and agencies. All 3 curricula were classroom based and delivered by trained health educators. The curricula consisted of 21 lessons in grade 5, 18 lessons in grade 6, and 16 lessons in grades 7 and 8. These lessons were delivered by research health educators over the school year (November-April). For more details about the essential components of the curricula and the overall design and evaluation of AAYP, (see Flay et al).³⁰

The general hypothesis of the present study is that the effects of the AAYP in reducing the rate of growth of violence (including physical fighting, weapon carrying, threatening others, cutting, stabbing, and shooting people) among youths in the experimental group is achieved through changes in some mediating or intermediate processes. This hypothesis is corroborated by the belief that many causal processes operate in a pathway or stepping-stone fashion, where the ultimate outcome is dependent on a series of causal steps.¹⁰ We investigate this using Baron and Kenny's 3-variable system, in which the independent variable affects a mediating variable, which in turn affects the outcome variable of interest.¹¹ If this assumption is true, then the final preventive effect of the AAYP on violence reduction will depend on the program's effects on the intermediate processes such as behavioral intentions, attitudes toward the behavior,

peers' (same grade) behaviors, best friends' behaviors, and peer group pressure. Operational definitions of these proposed mediating variables, along with a highlight of some of the theories that relate to them, are presented in the methods section.

A good number of school-based programs and interventions addressing the issue of violence exist nationwide and have been reported in the literature.²²⁻²⁹ Reviews of these programs and interventions consistently indicate that (a) there is a substantial lack of longitudinal data on effective violence prevention programs focused almost exclusively on African American youths; (b) the few studies that exist are either cross-sectional or pretest-posttest surveys only or have not been rigorously evaluated; (c) cross-sectional studies, even when fully evaluated, still cannot lay claim on long-term program effects; and (d) there is a need for studies that consider the mediating processes or mechanisms through which effective programs exert their effects.

The present study attempts to fill this void by (a) employing a longitudinal randomized design involving mostly African American youths, (b) focusing on the intermediate or mediating processes associated with the reduction of youth violence among African American youths, and (c) using rigorous and state-of-the-art evaluation techniques such as multilevel modeling to ascertain both program effects and mediated effects.

The purpose of this study is twofold: (a) to test whether the Aban Aya intervention has significant effects on the proposed mediating variables and (b) to test whether the significant preventive effects in reducing violence found in previous analyses³⁰ are mediated by changes in the proposed mediating variables.

METHODS

Participants

A total of 571 African American boys participated in the AAYP study between 1994 and 1998 and provided the data included in this analysis (582 girls also participated in the AAYP study, but are not considered in this paper because of lack of statistically significant program effects for them for the variables used in this paper). These students, from 12 elementary schools in the Chicago area and nearby suburbs, entered the study in fifth grade in the fall of 1994. The mean age of the students was 10.8 years and 14.3 years in 1994 and 1998 respectively. The range of household income for these students was \$10,000-\$13,000 in 1994 and \$15,000-\$18,000 in 1998. The participating schools were randomly selected, after stratification, from the Chicago public schools and randomly assigned to one of the 3 study conditions described above.

Previous analysis of the AAYP³⁰ showed that both SDC and S/C conditions had similar preventive effects compared with HEC. Because of the similarity in preventive effects and the need for statistical power for mediation analyses, SDC and S/C were combined as one treatment group for the present study. Among these male students, 389 were in the combined treatment group and 182 were in the control group.

Procedures

Detailed descriptions of research design, sample selection, random assignments, and data collection procedures have been presented in an earlier publication.³⁰ Only a brief description of the data-collection time lines and the measures used in this study is presented here.

Self-report data were collected from the participating students at the beginning of fifth grade (pretest, fall 1994), and posttests at the end of grades 5, 6, 7, and 8 in the spring of 1995, 1996, 1997, and 1998 respectively. Trained data collectors administered the surveys in the classroom

during school hours. The surveys were read aloud to the students to accommodate different reading levels.

Planned Missing Data

In the first wave of data collection, students answered all the questions on the survey. From the second wave on, the surveys were divided into 4 units, a core unit and 3 modules. Each student was required to complete the core unit, which contained all the behavioral outcomes such as violence items, and a random 2 of the 3 modules, which included part of the mediation variables. In effect, planned missing data occurred for all of the mediation measures. Because of this planned missing design, a curve-of-factors latent growth modeling approach³¹⁻³² was used for the mediation measures in this study.

Measures

Two kinds of measurements were employed in this study. The first is the combination of 7 items that constituted the measure of violence behaviors, and the second is the measurement of proposed mediating variables. Except for the dichotomous treatment group indicator (1=treatment, 0=control), all of the violence outcome and the associated mediating variable measures were collected longitudinally (Time 1 = 0yr to Time 5 = 3.25yrs) from child self-reports.

Violence scores—The outcome of interest in this paper is the reduction in the rate of growth of violence as indicated by the violence score. The violence score consists of 7 items. Description of these items, how they were measured, and their Cronbach α 's are presented in Table 1. Subjects who had data on at least 6 of the 7 items at any time point were included in the analysis. For the less than 8% of subjects with one missing item, the missing value was replaced by the mean of the other 6 items. The resulting violence score ranged from 7 to 28.

Proposed mediating variables—Five potential mediating variables (behavioral intentions, attitudes toward violence, estimate of peers' behaviors, perception of best friends' behaviors, and friends' encouragement to engage in problem behaviors) were selected for this analysis. These variables are defined below to clarify their usage in this study.

Adolescents' behavioral intentions is defined in this study as what the individual plans to do in the future about a particular situation or problem. For example, "In the next one year, or 12 months, do you think you will try to get into a physical fight?" Decisions and intentions to engage in violence have been suggested as the most immediate determinant of actual behavior by the theory of planned behavior (TPB)¹² and the theory of triadic influence (TTI).¹³ Studies in other areas of adolescent behavior also show that adolescents' intentions to perform a particular behavior are predictive of behaviors such as cigarette smoking and illicit substance use.¹⁴ We contend, in this study, that the AAYP will improve the adolescents' behavioral intentions to avoid violence, which in turn will lead to reduction in violent behaviors as reported by the participants.

Attitudes toward violence is defined in this study as whether or not the individual thinks it is good or bad for them to perform, or refrain from performing, a given behavior. For example, "Do you think it's good or bad for you to carry weapons?" The theory of reasoned action (TRA)¹⁵ indicates that adolescents' attitudes regarding their own behavior will increase the likelihood of performing a particular behavior.

Estimate of peers' (same grade) behaviors is defined as the number of peers that the student perceives to be engaging in a particular behavior. For example, "How many students in your grade get into physical fights?" Social learning theory²⁰ and the TTI suggest that interventions

might be successful if they change perceptions that a health-compromising behavior is normative or that health-promoting behavior is not normative. There is a general tendency for adolescents to overestimate the number of peers engaging in a particular behavior. They tend to believe that “everyone is doing it.” Peer groups and peer group influence, especially among adolescents, have consistently been suggested as important social factors that are related to violence behavior.¹⁶ One reason for this is that adolescents appear to learn more from their peers than from adults including parents. In fact, one study¹⁷ found that, except for the family, peers are the most important source of support in adolescence.

Perception of best friends' behaviors is defined in this study as what individuals think their best friends may be doing. For example, “Do your best friends stay away from situations where they could get into physical fights?” Youths are more likely to engage in negative activities when those behaviors are encouraged and approved by their friends.¹⁸ Earliest theories of juvenile delinquency causation dealing with peer associations suggest that delinquency often originates from the group membership the youth is associated with.¹⁹ High estimates and perceived approval of risk behaviors by significant others are associated with increased substance use.¹⁴ Therefore, interventions that alter the behaviors of those people with whom one is motivated to comply are more likely to be effective in preventing antisocial behaviors.¹³

Friends' encouragement to engage in problem behaviors is defined as whether or not significant others such as friends and family members want them to perform a particular behavior. For example, “Do your best friends want you to get into physical fights?” Both the social learning theory (SLT)²⁰ and the social control theory (SCT)²¹ lend support to this viewpoint by emphasizing the social influences on one's behavior. Also, the TRA indicates that adolescents' perceptions that others may want them to perform the behavior will increase the likelihood of doing the behavior.

Each of these variables consists of 4 items as shown in Table 1. Because of the planned missingness, where most students answered 2 or 3 items, the 4 items cannot be combined directly to create a mediation measure. A curve-of-factors latent growth model (LGM) was used to study the 4 items simultaneously. Variable descriptions including Cronbach α 's at each time point are listed in Table 1. Summary statistics including means, standard deviations, and sample sizes for both the treatment group (SDC + S/C) and the control group (HEC) are presented in Table 2.

Analyses

The analysis involved 2 steps. First, the growth curves of the violence behavior and its potential mediating variables were examined separately. A basic latent growth curve was Fit for the violence scale, and curve-of-factors LGM models were employed for the mediating measures. Secondly, 2-domain LGM mediation analyses were employed to assess mediation effects.

One-domain growth curves for violence behavior and mediation measures: A basic LGM approach³¹ is often used to model developmental parameters, such as intercept and slope, as factors of repeated observations of a single variable. This was done in this study to describe the growth curve of the violence outcome behavior. For the mediation measures in this study, the multiple items cannot be combined directly to form a single scale because of the planned missingness. However it is still important to examine these items simultaneously to determine the extent to which their development is interrelated. To this end, one of the multivariate LGM methods suggested by McArdle,³¹ the curve-of-factors model, is used. Using the violence attitude measure as an example, 4 items of attitude (attitudes toward getting into physical fights, carrying weapon, staying away from situations where they could get into a fight, and seeking help instead of fighting) were studied simultaneously. The curve-of-factors LGM model first

factor-analyzes the 4 items into a latent mediator factor (ie, a factor score for attitude) representing the common variance among the 4 items at each time point. Then the mediator factors from all time points were used in modeling the growth curve for the attitude measure. The same approach was used for modeling other proposed mediating variable measures of violence. Figure 1 represents a linear curve-of-factors LGM for the violence attitude measure.

In fitting the model, it is explicitly required that the factor loading for observed items (L2 to L4) be constrained to be equal across time to ensure factor pattern in-variance over time. The means for the latent factors and the latent intercept must also be fixed to zero. More detailed discussions concerning the mathematical representations and assumptions of the model are provided by McArdle.³¹

Mediation models—Before describing the mediation models that we used for this longitudinally designed study, a review of a simple mediation model is presented in Figure 2 to illustrate the terminology that we use in this paper. Models 1 and 2 respectively illustrate non-mediating and mediating processes.

Model 1 estimates the *total effect* (c) of the intervention X on the outcome Y , without taking the mediator M into account. Model 2 estimates simultaneously the *direct effect* of X on Y (c) and the *indirect effect* which consisted of X on M (a) and M on Y (b). As indicated in the literature,^{11,34} the steps in determining a mediation effect require that (i) the *total effect* (c) must be significant in Model 1, (ii) the *indirect paths* from X to M and from M to Y (both a and b in Model 2) must be significant, and (iii) if the *direct effect* of X on Y (c' in Model 2) is no longer significant with the *indirect path* in the model, a *complete mediation* has occurred. Partial mediation effects can also occur if the direct effect of X on Y (c' in Model 2) is less significant with the significant indirect path in the model.

Two-domain LGM mediation model—Because of the longitudinal nature of all the variables, we accommodated the growth curves of both the outcome behavior (basic LGM for violence) and the potential mediator (curve-of-factors LGM for mediator) into the mediation analysis described above. When putting 2 growth curves in one mediation model (Model 2 in Figure 2), it is reasonable to adjust for the correlations between the parameters from the outcome domain (violence intercept, slope, and quadratic terms) and those from the mediator domain (mediator intercept and slope). Therefore, we adjusted these correlations in both the nonmediation and the mediation models (Models 1 and 2 in Figure 2) to make the 2 models comparable. The actual simplified figure for the mediation analysis is shown in Figure 3. Note that in Model 1 (nonmediation model) we simultaneously fitted the growth curves for both the mediator and the outcome and adjusted the correlation between the mediator parameters and the outcome parameters. In Model 2 (mediation model), the relation between the mediator and the outcome becomes a regression. Criteria (i), (ii), and (iii) described in the previous paragraph were used to assess the mediation effects. The detailed information about how this 2-domain LGM mediation model was fitted is shown in Figure 4 and described as follows.

After the growth curves for the violence behavior and its mediators were examined separately, we selected the best-fit models for the 2 domains – a fixed quadratic LGM (with random intercept and slope) for violence behavior and random linear curve-of-factors LGMs for all of the mediators. Then the LGM model for the violence outcome and a curve-of-factors LGM model for a particular mediator were fitted in a single model, and the mediation effect was examined. Correlations between the random developmental parameters from each domain were added to obtain better fit of the model. For the violence outcome, because the latent quadratic parameter was a fixed parameter, the random latent slope was used as Y , the target variable. The random latent slope from the mediation domain (eg, slope of attitudes) was the mediator M in Figure 3. In the final 2-domain LGM mediation model shown in Figure 4, the upper half

is the quadratic growth for the violence outcome and the lower half is the linear growth for the mediator (attitude toward violence). The darkened triangle represents the mediation effects in Figure 3 (Model 2), with the treatment being the variable X, the slope of the mediator being the mediator M, and the slope of violence being the target Y. For the nonmediation model (Model 1 in Figure 3), the darkened arrow from the slope of the mediator to the slope of the violence was replaced by a correlation. Because the interest was the difference in the growth of violent behavior between treatment groups, the total and the direct effects (c and c') were calculated as the treatment effect on the *linear combinations* of the latent slope and quadratic term for violence ($= 3.25 * \text{treatment effect on slope} + 3.25^2 * \text{treatment effect on quadratic}$), ie, the GROWTH of violence. Similarly, the effect of the treatment on the mediator (a) is presented as the treatment effect on the GROWTH of the mediator ($= 3.25 * \text{treatment effect on the slope of mediator}$). Criteria (i), (ii), and (iii) from the previous section were used to assess whether complete mediation effects occurred.

The software that was used to implement the models was the Mplus program,³² which allows for the inclusion of incomplete data. One-tailed tests were used in testing all the effects.

RESULTS

Program Effects From One-Domain Growth Curves

Detailed results from the one-domain models for both the violence behavior and the 5 mediation measures are listed in Table 3. The results from a LGM show that a quadratic model must be used for the growth of violence, and model-fit statistics show that a fixed quadratic term is sufficient. The violence curve for the control group has a positive slope and a nonsignificant quadratic term, which means that violence increases steadily over time for the control group. The curve for the treatment group also has a positive slope, but there is a significantly negative quadratic term due to the treatment. As a result, the violence growth of the treatment group is significantly lower than that of the control group by the end of the study. This verifies the significant program effect on the outcome variable, and it is consistent with previously reported results.³⁰ For all of the 5 potential mediators, results from the one-domain curve-of-factors models show that linear models are sufficient in describing the growth curves. In Table 3, the significant negative terms of treatment slope minus control slope indicate that the treatment is significant in reducing the increase of the mediating variables, which result in smaller growths in all mediation measures for the treatment groups by the end of the study. That is, the program has significant effects on all of the mediation measures.

Mediation effects from 2-domain models—Mediation effects are modeled using 2-domain LGM models. Likelihood and other model-fitting statistics show that, compared to the one-domain model for violence without considering the mediators, the 2-domain models improve fit significantly. The total effect is the effect of the treatment on the growth of the violence outcome in a nonmediation model, where the relationship between the random slope of the violence and the random slope of the mediator are adjusted as a correlation. Then, in the mediation model, the slope of the violence outcome is regressed on the slope of the mediator. The indirect effect is then made up of the effects from the treatment to the slope of the mediator and from the slope of the mediator to the slope of the outcome. The direct effect is the effect of treatment on the growth of the outcome in the same mediation model after subtracting the indirect effect.

The results of mediation analysis with the parameter estimates and the significant levels in Table 4 show that, again, there was a significant program effect (the c term from Model 1) for the violence behaviors. A negative sign for the total effect means that compared with the control group, students in the treatment group had significantly smaller increases in violence (about 1.2 units less) over time. Similarly, there was a significant effect of treatment (a term from

Figure 3, Model 2) on the growth of all 5 mediating variables. Again, the negative parameter estimates imply that students in the treatment group had significantly smaller increases in the mediating variable measures compared to the control group. Except for the friend encouragement variable, all of the mediating variables had significant (marginally significant for estimate of friends' behavior) positive effects on violence growth (b terms in Model 2). This implies that the higher the values for the mediating variables, the higher the growth of violence score. Again, except for the friend-encouragement variable, all the direct effects of the treatment on the growth of violence (c' terms in Model 2) were no longer significant with the indirect path in the model. This is consistent with the conditions necessary for mediation effects. Based on these results, we can state that behavioral intentions, attitudes toward violence, and estimates of peers' behaviors are complete mediators for violence and that estimates of best friends' behaviors is a marginally significant complete mediator for violence.

DISCUSSION

Violence behaviors, and other antisocial behaviors, tend to increase in both seriousness and frequency as children develop from preadolescence into adolescence.³⁶ Therefore, the primary objective of this analysis was to determine if the previously reported reduction in the rate of increase in violent behaviors was mediated by changes in some selected psychosocial mediators (behavioral intentions, attitudes toward violent behaviors, estimates of their peers' behaviors, estimates of best friends' behaviors, and desire to comply with friends' wishes).

The results reported in Table 4 provide evidence that the AAYP interventions significantly reduced the rate of growth of violent behaviors and all the proposed mediating variables in the experimental group compared to the reference group. The findings of significant mediation effects for nearly all the mediators suggest that changing the perceptions of the behaviors of best friends and peers may be an important factor in obtaining program effects in reducing violence behavior. This is similar to changing the social environment in which these youngsters operate.

The results presented in Table 4 also provide some evidence that social and psychological factors such as behavioral intentions, attitudes, and peer influences may mediate the relationship between the effect of AAYP and reduction of youth violence. They show that the intervention improved participants' intentions to avoid violence, improved their attitudes toward violent behaviors, and strengthened their ability to resist peer pressure to engage in negative behaviors. The results of the mediation analysis further suggest that virtually all of the associations between the intervention and the reduction in the rate of growth of violence arose from the mediating effects of behavioral intentions, attitudes toward violence, and estimates of peers and best friends behaviors. These are important findings and point to the need to emphasize these constructs in future violence prevention programs.

Limitations of the Study

There are several factors that could potentially influence the results of this study and their interpretations. First, self-report data can introduce a certain level of bias by either overestimating or underestimating the adolescents' actual behaviors. This is particularly important when we consider the undesirability of admitting to, or reporting on, antisocial behaviors such as violence. However, evidence is accumulating,³⁷ that self-reports of other antisocial behaviors such as drug use with adolescent samples provide reliable and valid estimates. We used several data collection strategies to make the students comfortable in their responses and to guarantee them strict confidentiality. For example, we made sure that health educators did not collect data from students in their schools, and identification codes were used on the surveys instead of student names. As it turned out, the reliabilities for some of the mediation measures are moderately low, possibly due to the limitation in the use of self-report

data, but this only made it more difficult to find mediation effects and, hence, made our conclusions more conservative.

Second, the unit of observation in this study was at the student level, whereas unit of assignment was at the school level. This design can potentially result in clustering effects. In previous analysis, we did include random effects from both individual and school levels. The results showed that the school-level random effects were not significant and the conclusions for the program effects were not affected. Therefore, for simplicity in the mediation modeling, the clustering effects were not considered in this study.

Third, the 5 variables proposed as mediators may not be the only possible mechanisms through which the program may exert its effects. Other processes such as assertiveness, self-efficacy, bonding and attachment to significant others, and so on, which are not included in this study, may also be possible mediators.

Implications of the Study

The findings from the present study have implications for future development of violence prevention interventions. First, from a practical standpoint, the findings from this study may be useful in identifying some of the factors that stand between a violence prevention effort and its effect in reducing youth violence. In public health research, this is considered the first step toward preventing violence.³⁸ AAYP showed not only that there were preventive program effects, but also that these program effects were contingent on certain social and psychological factors - the mediators. Second, from a methodological point of view, the use of latent variable techniques such as the curve-of-factor LGM allowed us to include multiple items of the mediating variables when planned missingness is present. Third, the findings in this study confirm that peers, either by encouraging and urging peers and friends to engage in certain behaviors or by engaging in these behaviors themselves for their peers to observe and/or imitate, are important in influencing adolescent behaviors. Adolescents' involvement with deviant peers is a key factor in developing problem behaviors. Many researchers have argued that adolescents who socialize and form friendships with deviant peers are at increased risk of developing problem behaviors.³⁹⁻⁴⁰ Finally, the significant effects from this study are consistent with the findings of previous research,²² providing further evidence that violence prevention programs that teach adolescents resistance and negotiation skills may significantly reduce violence. The current findings support the use of the social cognitive theoretical approach to school-based violence prevention programs for African American adolescents. This approach (a) uses accurate information to increase knowledge about consequences of violence, (b) imparts practical skills for the youngsters to translate the knowledge into preventive action, (c) uses role-plays and feedback to practice the imparted skills, (d) changes the social norms and the social environment by providing opportunity for peers and classmates to be involved in the program, and (e) provides accurate information about Afrocentric culture.

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Figure 1.
Curve-of-factors LGM for the Mediating Variable (Attitudes)

Figure 2.
Terminology for Mediation Model

Figure 3.
Mediation Model in this Study

Figure 4.
Two-domain LGM Mediation Model (Violence and Attitude)

Table 1 Variable Descriptions and Cronbach α 's

Scale (* Cronbach α 's)	Items	Responses for Items
Violence Behavior (α 's* : 0.60; 0.75; 0.75; 0.77; and 0.76)	Have you ever and in the last 3 months (90 days), did you (1) carry a gun; (2) carry a knife or razor; (3) threaten to beat up siblings; (4) threaten to beat up someone else; (5) threaten to cut, stab, or shoot; (6) cut or stab someone, and (7) shoot at someone?	1 =Never; 2=Yes for lifetime, but not recently; 3= Once recently; 4=More than once recently
Behavioral Intentions (α 's* : 0.47; 0.64; 0.66; 0.62; 0.68)	In the next one year, or 12 months, do you think you will try to (1) get into a physical fight; (2) carry a weapon; (3) stay away from fight situations; and (4) seek help instead of fighting?	0=Definitely No; 1=Probably No; 2=Not sure; 3=Probably Yes; 4=Definitely Yes
Attitudes Towards Violence (α 's* : 0.45; 0.52; 0.50; 0.62; 0.72)	Do you think it's good or bad for you to (1) get into a physical fight; (2) carry a weapon; (3) stay away from fight situations; and (4) seek help instead of fighting?	0=Very bad; 1=Bad; 2=Neither; 3=Good; 4=Very good
Estimate of Peers Behaviors (α 's* : 0.48; 0.26; 0.39; 0.40; 0.51)	How many students in your grade (1) get into a physical fight; (2) carry a weapon; (3) stay away from fight situations; and (4) seek help instead of fighting?	0=None of them; 1=Some of them; 2= About half of them; 3=Most of them; 4=All of them
Estimate or Best Friends' Behavior (α 's* : 0.51; 0.58; 0.64; 0.61; 0.72)	Do your best friends (1) get into a physical fight; (2) carry a weapon; (3) stay away from fight situations; and (4) seek help instead of fighting?	0=Definitely No; 1=Probably No; 2=Not sure; 3=Probably Yes; 4=Definitely Yes
Peer Encouragement (α 's* : 0.70; 0.60; 0.60; 0.63; 0.69)	Do your best friends want you to (1) get into a physical fight; (2) carry a weapon; (3) stay away from fight situations; and (4) seek help instead of fighting?	0=Definitely No; 1=Probably No; 2=Not sure; 3=Probably Yes; 4=Definitely Yes

* For grades 5-8 respectively

Table 2
Means (Standard Deviations) for Violence and Its Meditational Measures by Treatment Condition

Time (in year)	T1 = 0		T2 = 0.5		T3 = 1.5		T4 = 2.5		T5 = 3.25	
Scales (range of scores)	Treat [*] N=219	Control N=89	Treat [*] N=209	Control N=86	Treat [*] N=212	Control N=101	Treat [*] N=170	Control N=90	Treat [*] N=171	Control N=87
Violence Behavior (Range 7-28)	10.49 (3.21)	10.28 (3.49)	12.04 (4.50)	12.41 (4.01)	12.15 (4.48)	11.83 (3.74)	13.11 (4.78)	12.71 (4.50)	12.92 (4.08)	14.60 (5.43)
Intentions (Range 0-4)	1.43 (1.59)	1.27 (1.55)	1.31 (1.43)	1.33 (1.39)	1.31 (1.34)	1.36 (1.29)	1.65 (1.35)	1.77 (1.37)	1.57 (1.41)	1.80 (1.31)
Attitudes (Range 0-4)	0.83 (1.17)	0.85 (1.23)	0.87 (1.18)	0.88 (1.20)	0.93 (1.18)	0.90 (1.14)	1.09 (1.09)	1.15 (1.15)	1.13 (1.18)	1.29 (1.20)
Estimate of Violent Peers (Range 0-4)	1.79 (1.50)	1.71 (1.48)	1.87 (1.41)	1.88 (1.44)	1.95 (1.35)	1.95 (1.34)	2.23 (1.28)	2.05 (1.30)	2.16 (1.37)	2.46 (1.38)
Best Friend's Behavior (Range 0-4)	1.77 (1.56)	1.64 (1.53)	1.75 (1.41)	1.89 (1.45)	1.90 (1.29)	1.76 (1.32)	2.14 (1.31)	2.14 (1.31)	2.09 (1.38)	2.48 (1.40)
Peer Encouragement (Range 0-4)	1.31 (1.31)	1.27 (1.25)	1.47 (1.36)	1.52 (1.38)	1.59 (1.28)	1.56 (1.31)	1.74 (1.31)	1.79 (1.23)	1.64 (1.37)	1.87 (1.42)

Note.

* SDC and S/C were combined as one treatment group.

Because of planned missingness which occurred in the multiple items of mediating variables, weighted means and standard deviations were used. Sample sizes for mediating variables were about 2/3 of the behavior measure.

Table 3
Results From One-Domain Models for Violence and Mediators

	Model Fit Statistics			Estimate (SE)		Estimate (SE)
	LogL (N Parameters)	AIC BIC	Parameters	Control	Treatment-Control Difference	
Violence Outcome	-8754.1 (24)	17556 17677	Intercept	10.476(0.321) ***		
			Slope	0.970(0.406) ***	0.085(0.389) **	
			Quadratic	0.084(0.125)	-0.456(0.152) ***	-1.278(0.637) **
Intention	-16375.4 (28)	32807 32948	Intercept	0(0) ^b	0.437(0.083) ***	
			Slope	0.331(0.039) ***	-0.218(0.049) ***	-0.709(0.159) ***
Attitude	-11063.7 (24)	22175 22297	Intercept	0(0) ^b	0.192(0.059) ***	
			Slope	0.202(0.033) ***	-0.086(0.042) **	-0.279(0.137) **
Estimate of Peers	-14694.7 (28)	29445 29586	Intercept	0(0) ^b	0.139 (0.053) **	
			Slope	0.215 (0.032) ***	-0.061 (0.038) *	-0.198 (0.124) *
Friends' Behavior	-16725.7 (28)	33507 33648	Intercept	0(0) ^b	0.346 (0.084) ***	
			Slope	0.323(0.041) ***	-0.162 (0.050) ***	-0.527 (0.163) ***
Friends Want You	-15763.1 (28)	31582 31634	Intercept	0(0) ^b	0.185 (0.069) ***	
			Slope	0.234 (0.034) ***	-0.107 (0.042) ***	-0.348 (0.137) ***

Note.

* P<0.10

** P<0.05

*** P<0.01

^a Effect of Treatment = Treatment Growth – Control Growth

^b The means of intercepts in the curve-of-factors LGM are required to be fixed to 0.

Table 4

Results for Mediation Effects from 2-Domain Models

Mediating Variables	Model Fit Statistics		Estimate (SE)		Estimate (SE)		Estimate (SE)	
	LogL (N Parameters)	AIC BIC	Total Effect of Treatment on Growth of Violence (c in Model 1)	Effect of Treatment on Growth of Mediator (a in Model 2)	Effect of Mediator Slope on Violence Slope (b in Model 2)	Direct Effect of Treatment on Growth of Violence (c' in Model 2)		
Intention	-23983.6 (61)	48089 48397	-1.228** (0.631)	-0.559*** (0.143)	4.068*** (1.122)	1.047 (0.883)		
Attitude	-18793.2 (57)	37700 37988	-1.204** (0.598)	-0.280** (0.133)	2.589*** (0.648)	-0.483 (0.580)		
Estimate of Peers	-22532.3 (61)	45186 45494	-1.157** (0.607)	-0.205** (0.124)	2.887** (1.245)	-(0.657) (0.657)		
Friends' Behavior	-24549.9 (61)	49221 49529	-1.071** (0.620)	-0.514*** (0.156)	4.415* (2.780)	1.187 (1.616)		
Friends Want You	-23607.7 (61)	47337 47645	-1.189** (0.628)	-0.322** (0.140)	1.017 (0.820)	-0.861* (0.669)		

Note.

* P<0.10

** P<0.05

*** P<0.01

The total effects of treatment on growth of violence are different for each mediator. This is because the correlations between the parameters (eg, intercept and slope) for the outcome and the parameters for the mediator are different depending on the particular mediator in the model.