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Longitudinal Follow-up Evaluation of Peacebuilders

Final Project Report, 1996-2000

Introduction

The goal of this longitudinal project was to evaluate the effectiveness of Peacebuilders, a universal school-based violence prevention program for children in elementary grades K-5. In the first three years of the project (1993-1995) Peacebuilders was implemented in 9 K-5 schools in Tucson, AZ. In the 3-year follow-up project, students were followed annually (1996-1998) through middle school. Data were collected in 1994 and 1995 in the fall and spring of each year, then in the spring annually thereafter (1996, 1997 and 1998). The final cohort included data from 7 different time points on children in grades K-8 over a five-year period (see data figure below).

Consistent with the original project, the focus of the 3-year ongoing follow-up was teacher and child rated social competence and aggressive behavior. We also added teacher assessments of child delinquent behavior, as well as child ratings of delinquency, exposure to violence and victimization from violence, parental monitoring, and weapon carrying. The 3-year follow-up project collected survey data from teachers and students in 16 elementary and middle schools in two districts in Pima County, AZ.

This final project report contains copies of all survey instruments utilized in the follow-up (English and Spanish versions) as well as code books for the cross-sectional and longitudinal teacher and child data bases. Representative copies of all consent forms for students and teachers, as well as other data collection measures (e.g. school walk-throughs) are also included in the Appendices.

The evaluation project was a collaborative effort between Kent State University (Flannery), Auburn University (Vazsonyi), Pima County, AZ Community Services Department (Atha) and Dr. Dennis Embry, the original developer of the Peacebuilders intervention.

Description of the problem

Despite recent downturns in national rates of violence perpetration, a significant number of young people remain perpetrators and victims of interpersonal violence in our society (Dahlbert, 1998; Mercy & Potter, 1996; Snyder & Sickmund, 1995). Though the overall homicide rate in the U.S. has declined, rates for homicide and nonfatal injuries among children and adolescents remain at significantly high levels (U.S. Department of

Justice, 1992, 1995). Further, the average age of both victims and perpetrators of violence has decreased, including the age of arrest for murder (Mahuire et al., 1995; U.S. Department of Justice, 1993). National surveys continue to illustrate the high rates of victimization from violence among youth (Boney-McCoy & Finkelhor, 1995) with a significant number of children assaulted at or on the way to school (Bastian & Taylor, 1991) and high rates of exposure to violence and victimization from violence at school (Flannery, 1997; Elliott, Hamburg & Williams, 1998). While the risk of homicide victimization at school remains low (Kachur et al., 1996), the availability and use of firearms and other weapons has heightened the lethality of violence among young people (Rushforth & Flannery, 1999) and has significantly increased the likelihood that specific conflicts will escalate into lethal exchanges (Wilkinson & Fagan, 1996). If we are to inform public policy and risk prevention for young people, it is imperative that we identify, through applied evaluation studies, programs that effectively prevent youth violent behavior and its associated precursors (Powell et al., 1996; Satcher et al., 1996).

An essential first step to effective violence prevention among young children is to understand that violent behavior occurs along a developmental continuum of behavioral severity (Flannery, 1997; Flannery & Williams, 1999; Tolan et al., 1995; Tremblay et al., 1995). For young children, aggressive behavior such as hitting, kicking and verbal insults are the precursors of violent behavior in adolescence (CPPRG, 1999; Dahlberg, 1998; Huesmann et al., 1996; Stoolmiller, Eddy & Reid, 2000; Tremblay et al., 1995) and the triggers which can escalate interpersonal conflict into violence. Longitudinal research has consistently demonstrated that aggressive, peer-rejected children in first grade are at increased risk for engaging in delinquent, violent behavior in adolescence (Hawkins et al., 2000; Loeber & Farrington, 1998; Tolan & Gorman-Smith, 1998; Tremblay et al., 1992; Tremblay et al., 1995; Walker et al., 1995) and to become antisocial adults (Eron & Huesmann, 1990).

Promising studies exist showing that the developmental trajectory of youth violence might be prevented (CPPRG, 1999; Dahlberg, 1998; Englander-Golden et al., 1989; Hawkins, 1995; Howard, Flora & Griffin, 1999; Stoolmiller et al., 2000; Tremblay et al., 1991). With a few exceptions (e.g. CPPRG, 1999) such studies typically do not occur on a large enough scale or last long enough to impact public policy or practice. We still lack consistent evidence of whether a relatively low-cost, widely implemented universal preventive intervention approach in early elementary grades will lead to significant and sustainable behavior change.

Our hypothesis was that youth aggressive behavior could be reduced by initiating prevention early in childhood, and by increasing children's resilience and social competence (CPPRG, 1999; Kellam et al., 1998; Tolan et al., 1995;). Previous studies have shown that aggressive behavior can be reduced by altering the social environments to emphasize rewards and praise for prosocial behavior (Walker et al., 1995), while reducing cues that might increase hostility (Lochman & Dodge, 1994). School is a logical public health setting for changing the cognitive, social and imitative characteristics of children at risk for violence, and schools can be thought of as large antecedent and reinforcement systems which can increase or decrease antisocial and

prosocial behavior (Mayer & Sulzer-Azaraoff, 1990). Several groups of researchers have now shown that changes in schools are related to reduced risk for aggressive and violent behavior among children and adolescents (CPPRG, 1999; Elliott & Hamburg, 1999; Farrell & Meyer, 1997; Gottfredson, 1997; Greenberg et al., 1995; Grossman et al., 1997; Tolan & Guerra, 1994).

Peacebuilders attempts to alter individual child behavior by changing the culture or climate of an entire school. There is some evidence that Peacebuilders significantly affects the incidence of assault related and violent injury. Specifically, Krug and colleagues (1997) found that the incidence of injuries due to fighting for children in grades K-5 whose schools were randomized to Peacebuilders did not increase over a 1-year period, although the incidence of injuries due to fighting for children in control schools increased 56% over the same period (see Figure in Appendix I). While these are meaningful archival data, we report here on teacher and child self-reports of social competence and aggression, which have high predictive value for long-term prevention efforts (CPPRG, 1999; Tolan et al., 1995; Tremblay et al., 1995; Walker et al., 1995). We expected that children in the immediate intervention schools, compared to those in the delayed intervention condition, would report greater improvements in social competence and greater reductions in aggressive behavior. By the end of the first two school years, we expected that relative to baseline levels, students in both conditions would exhibit significant increases in competence and decreases in aggressive behavior. We followed youth for an additional three years through middle school to assess whether early intervention events were evident over time.

Setting

In the initial three-year project, nine K-5 grade elementary schools in Pima County, AZ were selected from two large school districts to participate based on having high rates of juvenile arrests and histories of suspensions and expulsions. After meeting with school administrators to discuss the purpose and scope of the study, all schools initially contacted agreed to participate. Schools were located in all areas of town, including some in the central city and others on the outskirts of town. One of the eight schools consisted of a pair of schools, a K-2 school and a 3-5 school in the same neighborhood (approximately 1 block away), treated subsequently as a single school for pairing, intervention, analysis and discussion. All of the other schools were self-contained K-5 schools. One school that was randomly assigned to the delayed intervention condition did not gather initial baseline data, but rejoined the study at Time 2 in the spring.

In the follow-up study, students from the original elementary schools were followed into their primary feeder middle schools. This resulted in a total of 19 schools in two districts participating in the teacher and student surveys. All interventions took place in the project elementary schools. There was no intervention in the middle schools during the follow-up, but most elementary schools continued to deliver the universal intervention.

Intervention

Peacebuilders is a universal school-wide violence prevention program for elementary schools (grades K-5) implemented by all staff and students in a school (Gordon, 1983). Peacebuilders focuses on individual behavior change in proximal interpersonal and social settings (Tolan & Guerra, 1994). The program incorporates an ongoing, long-term strategy to alter the climate and culture of the entire school (Embry, Flannery et al., 1996; Embry & Flannery, 1999; Flannery, 1997). The intervention is purposely woven into the school's everyday routine to make it a "way of life," not just a time or subject-limited curriculum (Yoshikawa, 1994). So, Peacebuilders is not offered as a set number of sessions or hours per week, but includes activities that can be implemented on a daily basis in any classroom, by any teacher. Specifically, Peacebuilders attempts to change characteristics of the setting (antecedents) that trigger aggressive, hostile behavior, and increases the daily frequency and salience of both live and symbolic prosocial models in an effort to enhance social competence and decrease the frequency and intensity of aggressive behaviors. Peacebuilders specifically rewards prosocial behaviors and provides strategies to avoid the differential or accidental reinforcement on negative behaviors and conflict (e.g. Webster, 1993).

All children and staff in a school learn five simple rules via a common language which makes the intervention easy to learn and maintain: (1) praise people, (2) avoid put-downs, (3) seek wise people as advisers and friends, (4) notice and correct hurts we cause, and (5) right wrongs. To help students learn these principles Peacebuilders includes: 1) daily rituals related to its language and principles to foster a sense of belonging; 2) cues and symbols which can be applied to diverse community settings; 3) specific prompts to "transfer" across people, behaviors and time; and 4) new materials or strategies introduced for times and circumstances when positive behavior might otherwise decay (Embry, 1980; Stokes & Baer, 1977; Walker & Ramsey, 1995).

For example, staff and students are encouraged to use "praise notes" to pay attention to and reinforce positive, prosocial behavior in the classroom, at school, and at home. "Peace feet" might be placed by the drinking fountains to encourage children not to cut in line while waiting their turn, and students are sometimes sent to the principal for kind acts or good deeds rather than just for discipline problems (principal 'preferrals'). Peacebuilder rules and principles are prominently displayed throughout the school, and students complete activities from a specially designed comic book in which they are the designated "hero" (see Embry et al., 1996). Playground and recess activities are more structured and organized so as to reduce acts of aggression, and adults more actively monitor "hot spots" in school like lunchrooms and hallways in between activities. All of these strategies and activities are geared toward creating a positive climate and culture in the entire school, with an emphasis on reinforcement of positive behavior rather than simply the reduction of negative behavior.
The training of teachers in the implementation of the intervention had several phases including a preintervention orientations for all faculty and staff of the school, a half-day training workshop on the basic PeaceBuilders model, and extensive site coaching (on average 2 hours per week) in the first 3 to 4 months of the intervention, then on an as-

needed basis thereafter. Each participating school also received specific in-service sessions on important issues identified by staff (e.g. implementing activities with special needs children), periodic group forums to discuss successes and challenges to implementation, and occasional one day institutes that focused on applying and creating new materials and interventions. Attendance was voluntary at the institutes and forums. Additional description of program materials and training is available elsewhere (Embry et al., 1996). Additional program materials are available from Heartsprings, Inc. in Tucson, AZ. Since the inception of this project, Peacebuilders has become a copyrighted intervention program.

Evaluation Design

Schools were originally matched at baseline on school-level demographic characteristics and then randomly assigned as either an immediate or delayed intervention school (see Overview of Project Design Figure in Appendix I). We randomized at the school level because all students and staff in a school were exposed to and participated in the intervention.

Prior to baseline data collection, the 8 project schools were matched into four pairs (see Table in Appendix I) roughly based on size and geographic proximity, but we also considered percent student ethnicity, percent of students eligible for free or reduced lunch, and percent of students in ESL classrooms (Table 1).[2] School 2B contained fewer Hispanic and more Native American students than its comparison school 2A, but these were paired due to their close geographic proximity. Four schools were then randomly assigned as Peacebuilder continuous intervention schools (PBC) and began the program in the fall of 1994 immediately following baseline data collection. The remaining schools began the Peacebuilders program in 1995 after one year of baseline data collection, and are hereafter referred to as Peacebuilder delayed schools (PBD; see Overview of Project Design Figure in Appendix I).

Table 1. School demographic characteristics (percent) of matched pairs at baseline

Matched School Pairs	Caucasian	African American	Hispanic	Native Amer.	Asian Amer.	Free Lunch[1]	ESL[2]
1A	63.3	9.7	22.7	0.6	3.7	55	15
1B	62.5	14.6	18.5	1.9	2.5	58	8
2A	29.4	5.2	62.2	1.7	1.4	60	29
2B	11.6	.2	33.5	54.6	.3	94	56
3A	8.8	2.8	74.4	13.4	.6	60	29
3B	4.8	.8	91.8	2.5	.3	94	68
4A	36.0	3.5	58.5	1.0	1.0	73	21
5A	28.0	2.8	65.9	2.1	1.3	89	28

Note: "A" Schools are those randomly assigned to PeaceBuilders Continuous intervention which occurred immediately after baseline data collection. "B" Schools were assigned to the Peacebuilder Delayed condition. [1] Percent eligible for federally funded free or reduced lunch programs. [2] Students for whom English is their second language.

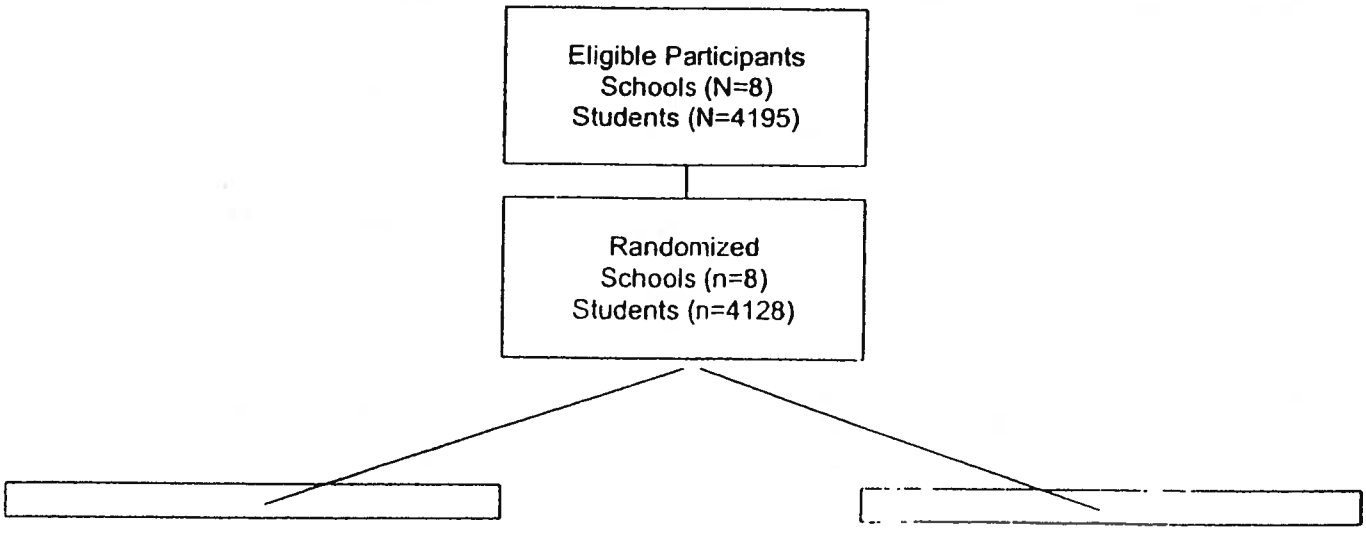
Data were collected annually in the spring of 1997, 1998 and 1999, for a total of seven data collections over 5 years. The final cohort contains children in grades K through 8 with a five year longitudinal cohort. Child self-report data for children in grades K-2 were not gathered in 1995-96, we gathered teacher report only on 2nd graders in 96-97:

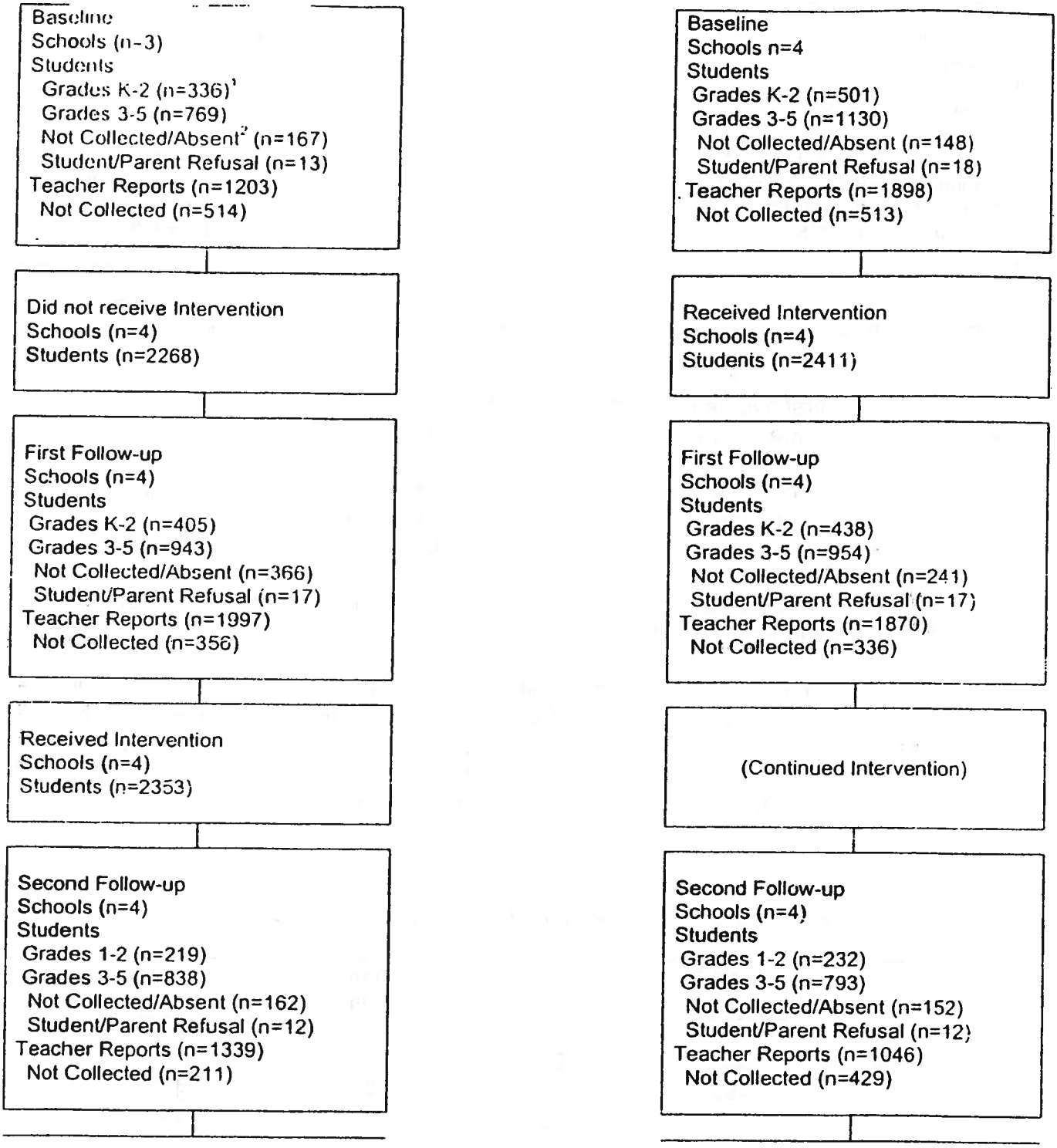
Year	Grade:	K	1	2	3	4	5	6	7	8
94-95	(Time 1 & 2)	X	X	X	X	X	X			
95-96	(Time 3 & 4)			X	X	X	X	X		
96-97	(Time 5)			X	X	X	X	X		
97-98	(Time 6)				X	X	X	X	X	
98-99	(Time 7)					X	X	X	X	X

Sample

Student and teacher sample sizes for the first two years are reported in Figure 2. Student response rates ranged from 86% to 93%, and teacher response rates from 75% to 86%. Less than one percent of parents chose to withdraw their child from any of the data collections. Similarly, less than one percent of children at each data collection time refused to complete a survey or interview, usually citing disinterest (see data on survey response rates for Times 1-4, sample size reconstruction tables, absence tracking tables, and survey response rate tracking form for Times 5-7 in Appendix 1). Various breakdowns of survey response rates for Times 1 through 4 are also contained in Appendix I.

Figure 2. Student and teacher sample sizes at each of the first 4 data collection points:




Baseline
Schools (n=3)
Students
Grades K-2 (n=336)[1]
Grades 3-5 (n=769)
Not Collected/Absent[2] (n=167)
Student/Parent Refusal (n=13)
Teacher Reports (n=1203)
Not Collected (n=514)
Did not receive Intervention
Schools (n=4)
Students (n=2268)
First Follow-up
Schools (n=4)
Students
Grades K-2 (n=405)
Grades 3-5 (n=943)
Not Collected/Absent (n=366)
Student/Parent Refusal (n=17)
Teacher Reports (n=1997)
Not Collected (n=356)
Received Intervention
Schools (n=4)
Students (n=2353)
Second Follow-up
Schools (n=4)
Students
Grades 1-2 (n=219)
Grades 3-5 (n=838)
Not Collected/Absent (n=162)
Student/Parent Refusal (n=12)
Teacher Reports (n=1339)
Not Collected (n=211)
Baseline
Schools n=4
Students
Grades K-2 (n=501)
Grades 3-5 (n=1130)
Not Collected/Absent (n=148)
Student/Parent Refusal (n=18)
Teacher Reports (n=1898)
Not Collected (n=513)
Received Intervention
Schools (n=4)
Students (n=2411)
First Follow-up
Schools (n=4)
Students
Grades K-2 (n=438)
Grades 3-5 (n=954)
Not Collected/Absent (n=241)
Student/Parent Refusal (n=17)
Teacher Reports (n=1870)
Not Collected (n=336)
(Continued Intervention)
Second Follow-up
Schools (n=4)
Students
Grades 1-2 (n=232)
Grades 3-5 (n=793)
Not Collected/Absent (n=152)
Student/Parent Refusal (n=12)
Teacher Reports (n=1046)
Not Collected (n=429)

Third Follow-up
Schools (n=4)
Students
Grades 1-2 (n=210)
Grades 3-5 (n=769)
Not Collected/Absent (n=196)
Student/Parent Refusal (n=12)
Teacher Reports (n=1150)
Not Collected (n=345)

Third Follow-up
Schools (n=4)
Students
Grades 1-2 (n=216)
Grades 3-5 (n=764)
Not Collected/Absent (n=144)
Student/Parent Refusal (n=11)
Teacher Reports (n=1163)
Not Collected (n=252)

Note: The unit of randomization was the school. [1]only 50% of the grade K-2 students were targeted to participate in the child self-report portion of the study of the children selected to be sampled

After the first two years of data collection, students were followed through middle school. We continued to track whether students came from or were still in:

1) schools who immediately provided the intervention after baseline (Peacebuilder continuous or Wave 1 schools);
2) in an elementary school where Peacebuilders was implemented in year 2, after a one year delay (Peacebuilder delayed or Wave 2 schools),;
3) or whether students in middle school came from a non-Peacebuilder (non-project) elementary school.

The final follow-up sample consisted of children and teachers in 19 elementary and middle schools in two districts in Pima County, AZ. One of the two districts (TUSD) chose not to participate at Time 6, but rejoined the study at Time 7. The following tables summarize the sample size and demographic characteristics for each data collection point (e.g. by grade, gender and Wave of intervention).

Table 2.

Population at each data collection point for children grades K to 2.

	Time 1 N	Time 2 N	Time 3 N	Time 4 N
Grade				
Kindergarten	548	674	--	--
1st Grade	492	651	455	445
2nd Grade	579	738	485	488
Gender				
Male	831	1037	454	455
Female	782	1026	486	478

Wave				
Wave 1 Peace Builder Continuous	1015	955	387	403
Wave 2 Peace Builder Delayed	604	1108	553	530
Total	1619	2063	940	933

Table 3.

Population at each data collection point for children grades 3 to 8.

	Time 1 N	Time 2 N	Time 3 N	Time 4 N	Time 5 N	Time 6 N	Time 7 N
Grade							
3rd Grade	643	628	552	511	688	307	--
4th Grade	630	644	525	498	630	298	559
5th Grade	625	625	529	496	619	341	571
6th Grade	--	--	24	33	1580	928	889
7th Grade	--	--	--	--	--	742	701
8th Grade	--	--	--	--	--	--	631
Gender							
Male	923	922	798	762	1742	1295	1726
Female	975	975	832	776	1775	1321	1625
Wave							
Wave 1 Peace Builder Continuous	1128	954	791	767	773	582	523
Wave 2 Peace Builder Delayed	770	943	839	771	821	271	415
Wave 3 No Peace Builder	--	--	--	--	1923	1757	2413
Total	1898	1897	1630	1538	3517	2616	3351

Table 4.

Population for each data collection point for teachers grades K to 8.

	Time 1 N	Time 2 N	Time 3 N	Time 4 N	Time 5 N	Time 6 N	Time 7 N
Grade							
Kindergarten	548	674	--	--	--	--	--
1st Grade	492	651	455	445	--	--	--
2nd Grade	579	738	485	488	721	--	--
3rd Grade	586	596	452	479	767	329	--
4th Grade	417	615	486	371	685	308	639
5th Grade	480	652	471	493	665	367	691
6th Grade	--	--	40	41	1726	910	1131
7th Grade	--	--	--	--	--	680	940
8th Grade	--	--	--	--	--	--	1082
Gender							
Male	1547	1944	1168	1132	2253	1320	2389
Female	1549	1982	1221	1185	2311	1274	2273
Wave							
Wave 1 Peace Builder Continuous	1902	1903	1048	1144	1036	593	731
Wave 2 Peace Builder Delayed	1200	2023	1341	1173	1099	276	648
Wave 3 No Peace Builder	--	--	--	--	2429	1717	3284
Total	3102	3926	2389	2317	4564	2594	4663

Ethnicity. Individual child ethnicity data was gathered via teacher reports beginning in the spring of 1996, so is not available for child baseline data. School archival data will have child ethnicity but this data has not yet been merged with the final survey data set.

On average students were predominantly Hispanic, followed by Caucasian, Native American, African-American and Asian:

Table 5.

Population ethnicity for data collection points 4 to 7, grades K to 8.

	Time 4 N (%)	Time 5 N (%)	Time 6 N (%)	Time 7 N (%)
Ethnicity				
Hispanic	1105 (51.4)	2263 (49.9)	1997 (77.1)	2725 (58.6)
Caucasian	599 (27.9)	1389 (30.6)	313 (12.1)	1178 (25.3)
Native American	284 (13.2)	507 (11.2)	164 (6.3)	413 (8.9)
African American	130 (6.0)	281 (6.2)	97 (3.7)	270 (5.8)
Asian	32 (1.5)	98 (2.2)	18 (.7)	67 (1.4)
Total	2150	4538	2589	4653

We expect to be able to identify child ethnicity for baseline through Time 3 data from school archival data which is still being gathered for integration into the final survey data base.

Additional demographic characteristics. Seventy-one percent (N= 1101) of students at baseline reported that "Mom" took care of them the most, 15% dad, 7% some other relative, and 2% each for step-parent or some other adult. According to parent reports at Time 2 (N= 809), 63% of children lived in homes with both parents present, 16% were mother only homes, and 12% included "one parent and other adults." Parent reports of household incomes, based on a sub-sample of our families of data gathered in years 1 and 2 (N= 800), were evenly distributed among the lower range of socioeconomic groups: 22% reported a household income of $7,000 or less; 19% income between seven and 15 thousand dollars; 24% between 15 and 25,000; 23% between 25 and 40,000; and 12% greater than $40,000 per year. The majority of our parents had completed the equivalent of high school or less: 15% less than 9th grade; 12% less than high school; 28% completed high school; 38% completed some college; and 7% had completed 4 years of college or more.

Informed Consent. The study protocol was approved by the Institutional Review Board for Human Subjects at the University of Arizona in Tucson, AZ and by the respective school research review committees. Once the project moved from Arizona to Case Western Reserve University and then to Kent State University, the protocol and consent procedures were approved the respective Institutional Review Boards. Copies of the Teacher consent form and Minor Oral Assent form are contained in Appendix II.

In general, parents were notified of the project via a letter mailed to the home and by school distributed newsletters. Parents were given the opportunity to withdraw their child from any data collection. Students were also informed that their participation was

voluntary and were provided an opportunity for alternative classroom activities if they chose not to take part. If a student was engaged in another activity (e.g. band class) we returned to attempt to gather information at a later date. Both districts followed this procedure and did not initially obtain active parental consent for all student participants because Peacebuilders had been adopted as a formal part of their curriculum and all students in a school participated without selecting individual students out for any reason. At the time of survey administration, students were asked to give oral assent and questions were answered regarding their participation. All students received rewards such as stickers or pencils for completing the surveys or interviews.

The only exception to this procedure was that at Time 7, one of the two participating districts (TUSD) decided to implement an active parental consent procedure in all of its participating schools. The strategy employed was to describe the survey to parents at the beginning of the school year to obtain consent at the time students were registered at the school. Students were still provided the opportunity to decline participation, and parents could still withdraw their child from participating at the time of the survey, generally during February and March.

Project staff also visited each school and discussed the survey and administration procedures with teachers and staff. Every school had a designated staff person who was compensated by the project to help coordinate survey data collection from teachers and students. This staff person also helped coordinate staff to organize surveys for tracking purposes prior to their administration. Considerable time was spent in work sessions to organize survey packets and to identify the right student with an identification number based on class lists so that no student had to put their name on any survey form. Instructions for work sessions and sample master student lists are contained in Appendix II. Additional materials on procedures and data collection processes are contained in Appendix IV.

Measures

A core group of items and scales were employed consistently from baseline through Time 4, during the first two years of data collection, and were retained in the 3-year follow-up study. Appendix III has copies of all student and teacher surveys utilized in the follow-up study. All surveys were available in both English and Spanish. Appendix III also contains a general data collection matrix for the project, reflecting the scales/variables gathered from different sources over the course of the project. Surveys for Time 5 (1997) and Time 7 (1999) are included. Time 6 surveys (1998 in Sunnyside district only) were the same as those employed at Time 5.

Teacher surveys.

Demographic Variables. Teachers reported on child ethnicity categorized into six groups: Hispanic, Caucasian, Native American, African-American, Asian, and other.

Aggressive Behavior. Teachers reported on child aggressive behavior using items adapted from the aggressive behavior subscale of Achenbach's (1991) Teacher Report Form (TRF). The TRF has been used extensively as both a clinical screening instrument and in large survey research to assess child externalizing behavior problems (Grossman et al., 1997; Achenbach, 1991). The 25-item aggressive behavior subscale asks teachers to rate child behavior on a three point scale, including 0= "not true", 1= "somewhat or sometimes true", or 2= "very true or often true." The items demonstrated high internal (alpha= .95) and test-retest reliability (r= .71) in our sample.

Social Competence. Teachers rated child social competence using the elementary version (grade K-6) 19-item short form of the Walker-McConnell (W-M) Scale of Social Competence and School Adjustment (Walker & McConnell, 1994). The W-M has three subscales, including school adjustment (7- items), peer-preferred behaviors (7- items), and teacher preferred behaviors (5- items). The school adjustment subscale assesses adaptive social-behavioral competencies highly valued by teachers within classroom instructional contexts. Peer accepted behaviors reflect peer values concerning forms of social behavior that govern peer dynamics and social relations within free play settings. Teacher-preferred social behaviors reflect teacher ratings of sensitivity, empathy, cooperation, self-control and socially mature forms of behavior in peer relations. Teachers responded to such items as "Appropriately copes with aggression from others" on a five-point Likert scale ranging from 1= never to 5= frequently. The W-M has demonstrated high internal consistency, test-retest reliability, and correlates with other teacher and child self-report measures of social competence (Walker & McConnell, 1994). For the present sample, internal consistency of the W-M was excellent across all four data collection points (average alpha= .96); test-retest reliability in our sample was adequate (Baseline to 6 months r= .68). The Walker-McConnell has been used in other preventive intervention studies with elementary school-aged children to differentiate behavior outcomes between treatment groups (e.g. Reid et al., 1999). The 19-item W-M was used for all students through grade six.

Teachers also reported on a single item of whether a student was involved in gang activity.

Child self-reports.

All scale items and scale reliabilities for Time 5 of the follow-up are contained in the appendices.

Demographics. Demographic information gathered from students included age, gender, and grade in school.

Aggressive Behavior. Child grade 3-5 self-report of aggressive behavior was assessed using items generated specifically for this study. The 9-item scale contained items such as "I hit someone" or "I put down other kids" rated on a three point scale ranging from 1="no" to 3= "a lot." The scale demonstrated adequate internal

consistency (alpha= .86) and good test-retest reliability (.71). Children in grades K-2 answered yes/no to five items assessing whether they got into trouble at school, if they ever got into fights, and if they ever cut in line.

Peacebuilding behavior. Child grade 3-5 self-report of peace building behavior was assessed using three items: "I helped build peace at school", "I told other kids they were PeaceBuilders", and "I earned rewards for peace building." Responses on the three point scale ranged from "no" to "a lot." The three items loaded on a single factor (eigenvalue= 1.86) and demonstrated adequate internal consistency (alpha= .72) and test-retest reliability across the four data collection points (.45). Children in grades K-2 responded yes/no to four items about building peace, like "I helped build peace at school," and "I earned rewards for peace building."

Prosocial behavior. 10- items were retained throughout the project assessing child self-reports of prosocial behavior (Time 5 alpha= .85).

Relationship with teacher. Children reported on the quality of the relationship with their classroom teacher, generally indicating whether the relationship was viewed as supportive or conflictual. (Time 5 alpha= .41).

Parental support/ discipline. Children reported on the quality of their relationship with parents, whether it was supportive or whether parents were more harsh in their discipline practices. Scale alpha for support= .81 and for discipline= .67.

Peer acceptance/rejection. Assessed the degree to which children perceived peers to be accepting of them or whether they felt rejected by their peers. Scale alspha for rejection= .76, for acceptance= .68.

Children grade K-2 surveys: During year 1 of the project, half of eligible K-2 students were randomly selected to be individually interviewed on 20 yes/no items that generally assessed prosocial and aggressive behavior. Individual interviews took place during the same class periods that older students in the school were completing their self-report surveys. No student refused to take part in the individual interviews. Teachers completed the same surveys for K-2 students at Times 1 through 4 as they did for students in grades 3 through 5. items on the K-2 student surveys and percent responses by Wave across Times 1 to 4 are contained in Appendix IV. Item loadings and scale reliabilities are contained in Appendix V.

Assessments added specifically in the follow-up:

Teacher report:

Delinquent behavior: The delinquent behavior subscale items from the Achenbach (1991) teacher survey were added to teacher assessments of individual student behavior. In addition, an 11-item delinquency scale was added to youth self-reports, to reflect the increasing age of the sample. The scale was adapted from Rowe

and Flannery (1994) and Flannery et al (1999). Scale reliability for our sample was adequate (Time 5 alpha= .83).

Social Competence. A modified 19-item version of the middle school Walker-McConnell was used in the follow-up for students in grades 7 and 8 (beginning at Time 6). Items were selected that loaded highest on the main factors consistent with the elementary school version, and wording was modified so that comparable items closely resembled the items on the 19-item scale. The modified middle school scale used for this sample had high internal consistency (Time 6 alpha= .97).

Child self-report:

Violent behavior. Violent behavior scores were derived from participant's reports based on the frequency with which they had engaged in each of the following six violent acts during the past year: threatening others with physical harm, slapping or punching someone before the other person hit them, slapping or punching someone after they had been hit, beating or mugging someone, attacking someone with a knife, or shooting at someone with a real gun. A six-point Likert scale ranging from "never" (0) to "almost everyday" (5) was used to assess the frequency of each type of violent behavior. Principal component analysis on the Violent Behavior Scale items showed that the items loaded on a single factor, accounting for 51% of the variance among items (Song, Singer, & Anglin 1997). Each item correlated highly with the variable cluster (range-.56 to .81) and the internal consistency of the items was high in this sample (Cronbach's alpha at Time 5=.79).

Recent exposure to violence. Recent exposure to violence was assessed by a 22-item scale which measured the amount of violence that a youth witnessed or was victimized by at home, at school, or in the neighborhood in the past year (Singer et al., 1995; Singer et al., 1999). This scale measures five specific acts of violence: threats, slapping/hitting/punching, beatings, knife attacks and shooting. For the first three types, separate items were designed to capture the site where the violence occurred: at home, at school, or in the neighborhood. Reports on knife attacks or shootings were not site specific. Subjects were requested to report separately violence they had experienced directly and personally witnessed over the past year. A six-point Likert scale ranging from "never" (0) to "almost every day" (5) was used to assess the frequency of violence exposure to each type of violence. Principal component analyses revealed the 22-items load on a single scale yielding five factors with adequate internal consistency (average Cronbach's alpha = .75). The five factors are: 1) witnessed violence in the neighborhood; 2) victimized by violence or witnessed violence at home; 3) witnessed violence at school; 4) witness or victim of a shooting or knife attack, and 5) victimized by violence at school or in the neighborhood (Singer et al., 1995). For our sample at Time 5 alpha= .88 for the overall scale.

Delinquent behavior. Due to the older age of the follow-up sample, we also added an 11-item scale of delinquent behavior (Time 5 alpha= .87). The scale

assessed delinquent behaviors like trespassing, stealing, truancy, cheating on tests, substance use, running away from home, and weapon carrying.

Parental monitoring. 5-items from Flannery et al. 99 answered on a four-point Likert scale ranging from "never" to "always." Items included: "Do your parents know where you are after school?"; "Is it important for your parents to generally know where you are?"; Do your parents know who your friends are?; Do you have to come home at a certain time?; and Do your parents want you to call home if you are late? Time 5 scale alpha= .71.

Items. Several individual items were also added to student surveys at follow-up. These included:

I was nervous about being safe at school
This year I brought a weapon to school
Would you get caught if you stole something?
Would you get caught if you carried a knife or a gun?
(For teachers) Shows signs of involvement with gangs.

Results

Process evaluation. Several strategies and assessments were employed in an attempt to assess the process, intensity and fidelity of the intervention implementation in project schools. In addition to specifically tracking students based on which type of school they were in, we gathered several pieces of information during the first two years of the intervention. The respective assessment forms are contained in Appendix 6.

Training and Intervention Questionnaire: This instrument was completed by teachers at the time of participation in annual training for Peacebuilders implementation. The measure assessed their perceptions of the utility of the training they received, their years of experience teaching, administrative support for the intervention, etc. This measure was not utilized in the follow-up. Survey items and results for Times 1 through 4 are included in Appendix VI.

Teacher use of intervention materials. During the first two years of data collection, teachers were asked specifically about their use of Peacebuilder materials in their classroom, their perceptions of the utility and usefulness of the materials, and their assessments of the utilization of the intervention in their school. Data on this measure is summarized in Appendix VI.

Playground behavior observations: Conducted primarily in year 1 of the intervention, but also on a limited basis in year 2, observers rated the number of aggressive behaviors by students on the playground in intervention compared to non-intervention schools. Summary data by school is contained in Appendix VI.

Walk-through school observation checklist: At systematic intervals during the first two intervention years, and annually thereafter during the follow-up, a trained project staff person visited each school and recorded the number and size of Peacebuilder materials visible in classrooms, hallways, and lunchrooms as one indication of the intensity of intervention implementation. Due to limited resources, this was the only process assessment that was retained for the follow-up from the original two year intervention. Sample results by type of display and by schools are contained in Figures 5-8 in Appendix VI. In the first two years we also tracked the number of visits made by intervention staff to each school (see Figure 9 in Appendix VI).

Initial findings for level of endorsement of Peacebuilder materials.

Some analyses have been conducted to assess child social competence, aggression and delinquency (by both teacher and child report) as a function of teacher rated use of Peacebuilder materials. For these analyses, we categorized levels of "endorsement" or use of intervention materials as "low", "moderate", or "high" and examined differences in behavior outcomes as a function of the level of use of intervention materials. We find more effects for differences based on teacher reports of child behavior outcomes than for child self-reports (see Tables 6 and 7 attached below):

<Insert Tables 6 and 7 about HERE>

Figures 3 through 5 attached illustrate some of the significant trends by child gender. For example, Figure 3 illustrates for an increase in social competence over time for males with teachers in moderate and high implementation classrooms, with no change for males in classrooms with low endorsement of Peacebuilder materials. Similar results occur for female social competence (Figure 5). Teacher rated aggressive behavior shows less effect over time as a function of level of teacher endorsement or use of Peacebuilder materials (Figure 4).

<Insert Figures 3 through 5 about HERE>

Outcome evaluation. For the first two years of data on outcomes, specifically aggressive behavior and social competence, we chose to analyze data using a two-level Hierarchical Linear Model (HLM).

Hierarchical Linear Modeling (HLM), a form of growth curve analysis, was employed to assess rates of change in individual child behavior across the two years of school-based intervention (Bryk & Raudenbush, 1992). Our specific focus was on differences in teacher- reported aggression and social competence and child reports of aggression, peace building and prosocial behavior as a function of length of child exposure to the intervention.

HLM has several advantages for the analysis of longitudinal data. First, responses on any outcome variable from the same individual over time will be

Table 6

GLM Pretest and Posttest Estimated Marginal Means by Level of Endorsement (Hypothesis 1 - teacher report)

	Pretest						Posttest								
Level of Endorse-ment Teacher (n=1022)	Low (n = 330)		Moderate (n = 345)		High (n = 347)		Low (n = 330)		Moderate (n = 345)		High (n = 347)		Time F	Time*TIQ F	Significant Time*TIQ Contrasts
	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE			
Social Competence	3.54	.04	3.86	.04	3.60	.04	3.58	.04	4.01	.04	3.80	.04	58.04*	7.34*	*a, b, c*
Aggression	1.34	.03	1.30	.03	1.40	.03	1.33	.02	1.30	.02	1.36	.02	.87	1.36	*c*

Note. * Multivariate F statistic is significant at p <.05; Posthoc Scheffe comparisons are significant at p < .05; *a* low endorsement vs. moderate endorsement, *b* low endorsement vs. high endorsement, *c* moderate endorsement vs. high endorsement.

Table 7

GLM Pretest and Posttest Estimated Marginal Means by Level of Endorsement (Hypothesis 1 - child report)

	Pretest						Posttest								
Level of Endorse-ment Child (n=451)	Low (n = 165)		Moderate (n = 116)		High (n = 170)		Low (n = 165)		Moderate (n = 116)		High (n = 170)		Time F	Time*TIQ F	Significant Time*TIQ Contrasts
	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE			
Social Competence	2.00	.04	2.07	.05	2.11	.04	1.94	.04	1.91	.05	2.03	.04	15.98*	3.01*	
Aggression	1.26	.03	1.21	.04	1.28	.03	1.24	.03	1.23	.03	1.25	.03	.29	.77	
Peace-Building	1.67	.05	1.81	.06	1.83	.05	1.69	.05	1.76	.06	2.01	.05	2.07	4.1*	*b*

Note. * Multivariate F statistic is significant at p <.05; Posthoc Scheffe comparisons are significant at p < .05; *a* low endorsement vs. moderate endorsement, *b* low endorsement vs. high endorsement, *c* moderate endorsement vs. high endorsement.

Figure 3

Teacher-rated social competence scores over time by level of endorsement (males)

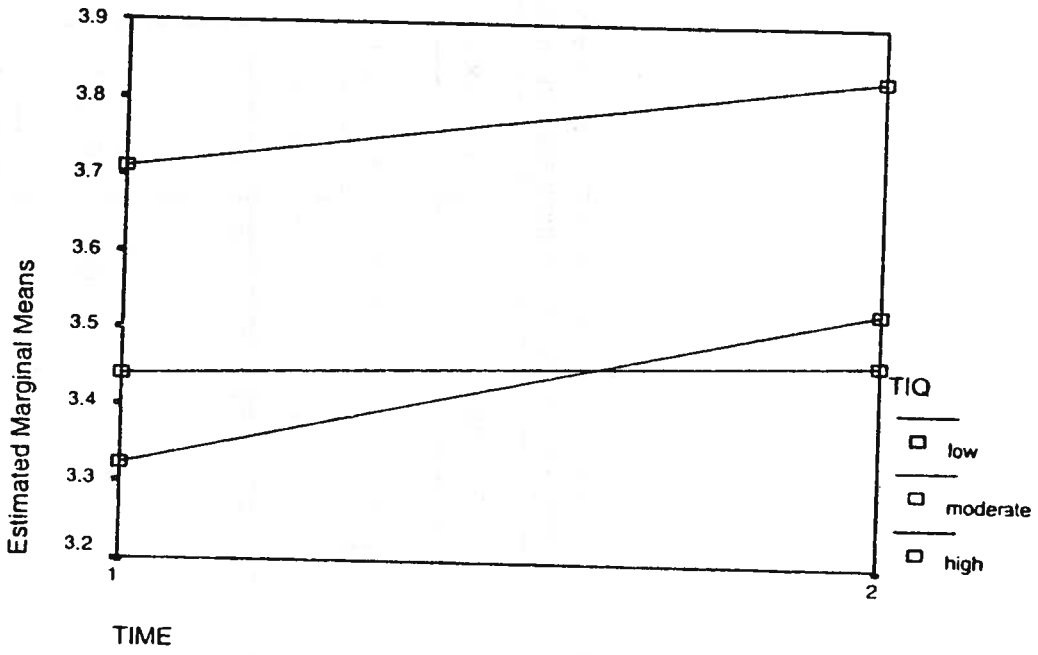


Figure 4

Teacher-rated aggression scores over time by level of endorsement (males)

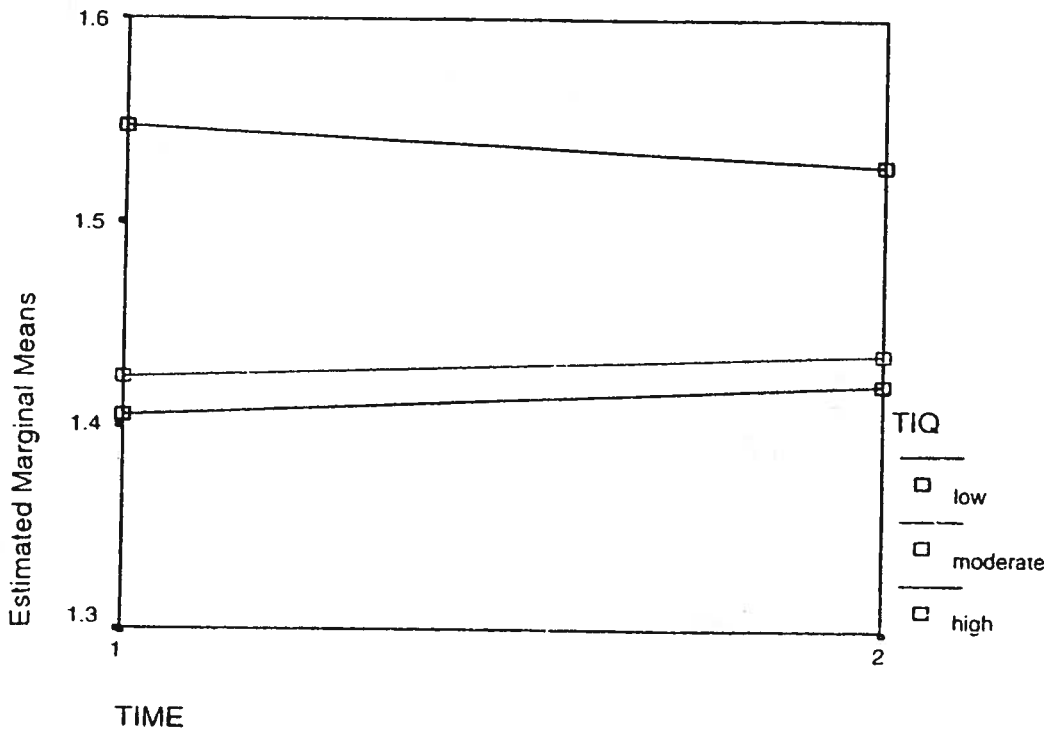
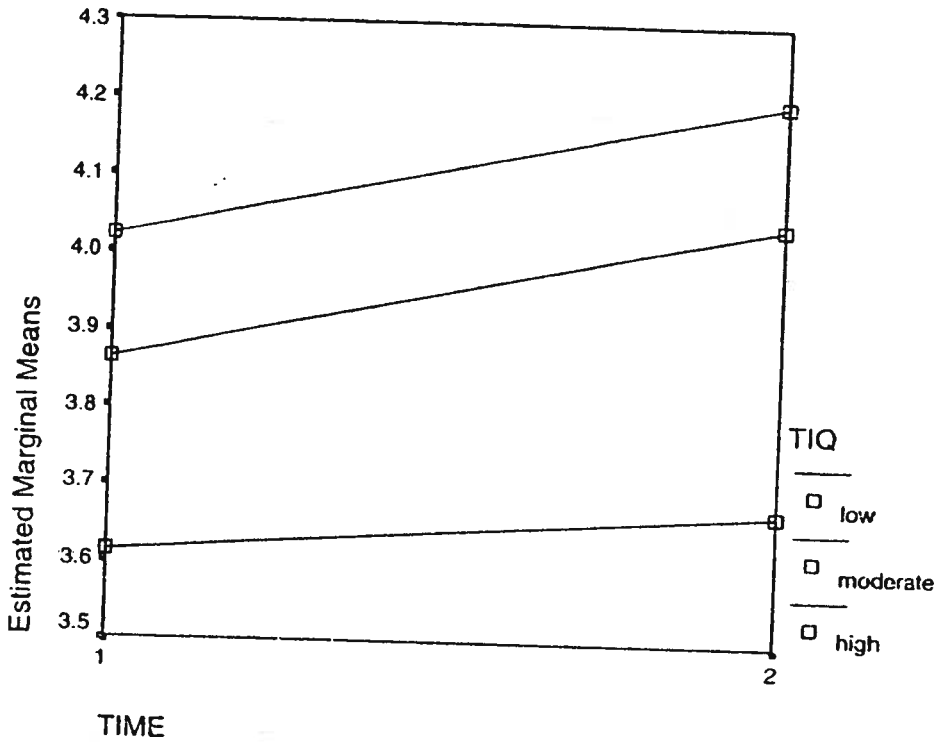


Figure 5

Teacher-rated social competence scores over time by level of endorsement (females)



correlated, thus violating the assumption about independent sample observations embedded in most statistical models dealing with cross-sectional data, and HLM takes this correlation into account. This intra-class correlation needs to be taken into accout when school is used as the unit of assignment to condition (Koepke & Flay, 1989; Murray & Wolfinger, 1994; Piper, Moberg & King, 2000; Rooney & Murray, 1996). Second, when applying conventional linear models to analyzing longitudinal data, one generally underestimates the standard errors of the impacts, and, therefore, may erroneously assume statistical significance. HLM effectively handles this problem, as well as others inherent in longitudinal data such as varying times between observations, subject attrition so that there are unequal groups at each data point over time, and the need to control for the effects of potentially confounding independent variables (Bryk & Raudenbush, 1992; Diggle, Liang & Zeger, 1994; Lindsey, 1993). HLM also allows an examination of both baseline group differences as well as rates of change over time. These advantages make HLM appropriate over the more conventional repeated measures analyses used previously in longitudinal studies.

Growth curve (HLM) analyses. Growth curve analyses examined individual rates of change in the outcome variables over time. In HLM the unit of analysis is the observation of an individual at a particular time point, and individual change is represented by an individual growth trajectory. In addition to allowing attrition subjects to be included in the analyses, HLM does not require the time interval between assessments to be equivalent (Bryk & Raudenbush, 1992). We used a two-level HLM model, with the first level representing individual growth trajectory, and the second level examining differences between length of exposure to Peacebuilders (continuous vs. delayed condition) after controlling for subject gender. We examined both main effect and interaction terms. The only trend suggesting a gender effect was a reduction in aggression for males ($p = .06$) in the PBC condition, so no other gender effects are reported below. No interaction effects were significant so these are not included. Unless otherwise noted, a linear model was the best fit to the data.

Fixed effects and growth rates for outcomes for grades K-2 and 3-5 by teacher and child self-report are contained in Tables 8 and 9. The "model for initial status" reflects differences by condition and gender for each outcome at baseline, while the model for growth rate reflects differences by intervention condition and gender, as well as their interaction, over time. For example, as expected at baseline boys were consistently rated by teachers to be more aggressive than girls (Table 8; $t = 6.39$, $p < .001$ for K-2 children; $t = 6.06$, $p < .001$ for grade 3-5 children). Conversely, girls were rated to be significantly higher at baseline on total social competence ($t = -8.48$, $p < .001$ for K-2 children; $t = -8.37$, $p < .001$ for 3-5). There was one baseline difference between the groups on teacher ratings. For K-2 children teachers rated students in the immediate intervention schools to be lower in aggressive behavior overall ($t = -1.76$, $p < .05$) than students in the delayed intervention condition.

Table 8. HLM Teacher ratings of child aggressive behaviors and social competence.

	Coefficients	
	Kindergarten-2nd Grade Teacher Ratings	
Fixed Effects	**Aggression**	**Social Competence**
Model for initial status		
Base	31.70	73.30
PBC (Reference: PBD)	-1.76*	.90
Gender: Boy (Reference: Girl)	6.39***	-8.48***
Model for Growth Rate		
Base	-.053	.04
PBC (Reference: PBD)	-.059	.56***
Gender: Boy (Reference: Girl)	-.007	.08
Intervention x Gender	-.007	-.09

	3rd-5th Grade Teacher Ratings	
Fixed Effects	**Aggression**	**Social Competence**
Model for initial status		
Base	30.18	74.89
PBC (Reference: PBD)	-.26	-1.29
Gender: Boy (Reference: Girl)	6.06***	-8.37***
Model for Growth Rate		
Base	.01	-.10*
PBC (Reference: PBD)	-026	.44***
Gender: Boy (Reference: Girl)	-.02	.04
Intervention x Gender	-.11+	-.07

Note. +$p<.10$ *$p<.05$ **$p<.01$ ***$p<.001$
PBC= Peacebuilder continuous group with 2 school years of exposure to the intervention; PBD= Peacebuilder delayed group with 1 year of exposure to the intervention.

For child self-report data, grade 3-5 children in the immediate intervention rated themselves to be slightly lower on aggressive behavior overall than youth in the delayed intervention condition (Table 9; t= -.43, p < .05). Older students in the immediate intervention group also rated themselves to be slightly higher on peacebuilding behavior than students in the delayed intervention group (t= .36, p < .01). Similar to teacher ratings, male students rated themselves at baseline to be higher on aggression and lower on peacebuilding and prosocial behavior (see Table 9).

Table 9. HLM Child self-reports of aggressive, prosocial, and peacebuilding behaviors

	Coefficients		
	Kindergarten-2nd Grade Self-Report		
Fixed Effects	**Aggression**	**Prosocial**	**PeaceBuilding**
Model for initial status			
Base	1.21	5.66	3.47
PBC (Reference: PBD)	-.13	.006	-.10
Gender: Boy (Reference: Girl)	.24*	-.06	-.20*
Model for Growth Rate			
Base	-.002	.003	.011*
PBC (Reference: PBD)	.003	.009	.14+
Gender: Boy (Reference: Girl)	.03*	-.005	.00
Intervention x Gender	-.03+	.001	-.02*
	3rd-5th Grade Self-Report		
Fixed Effects	**Aggression**	**Prosocial**	**PeaceBuilding**
Model for initial status			
Base	10.82	34.02	5.15
PBC (Reference: PBD)	-.43*	.86	.36**
Gender: Boy (Reference: Girl)	2.27***	-3.63***	-.44**
Model for Growth Rate			
Base	.000	-.04	.05***
PBC (Reference: PBD)	.008	-.06	-.02*
Gender: Boy (Reference: Girl)	-.021	-.05	-.02*
Intervention x Gender	-.007	.04	.02

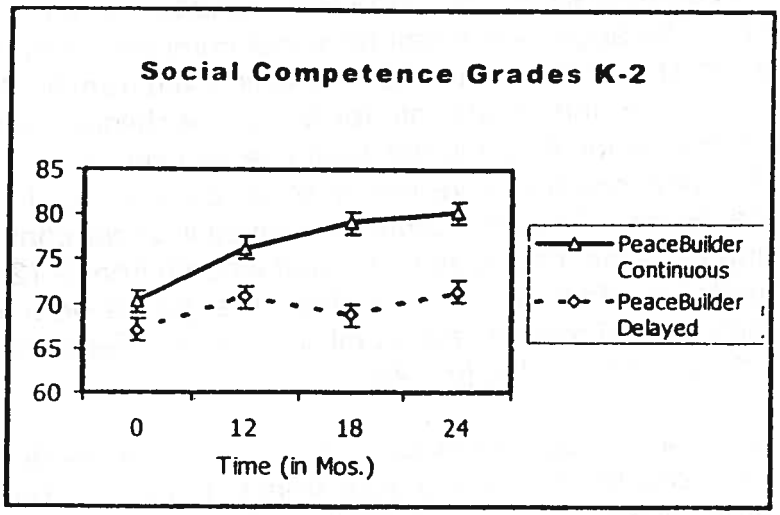
Note: *p<.05 **p<.01 ***p<.001

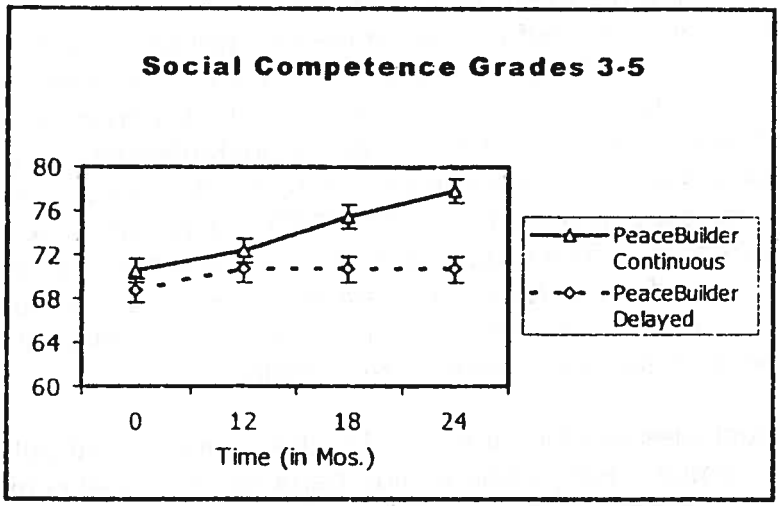
PBC= Peacebuilder continuous group with 2 school years of exposure to the intervention; PBD= Peacebuilder delayed group with 1 year of exposure to the intervention.

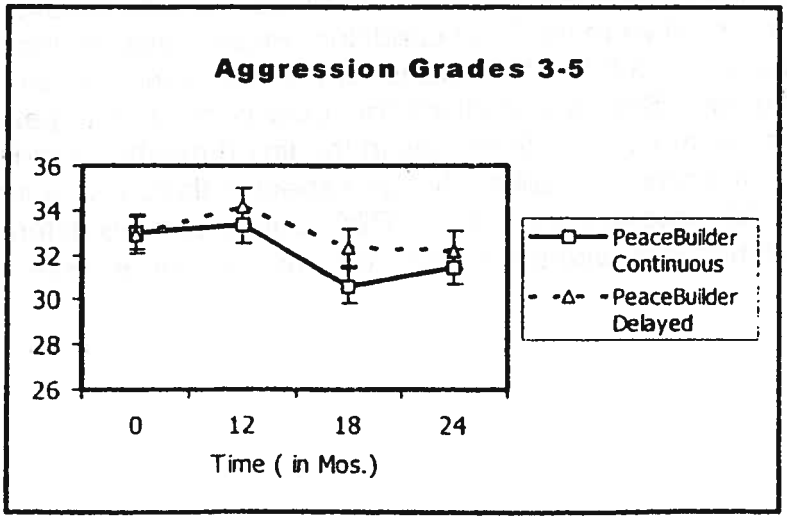
Trajectories for PBC and PBD conditions over the two- year intervention period are illustrated for variables with significant effects in Figures 6 (teachers) and 7 (child self-reports). Plotting the growth curves with 95% confidence intervals permits us to: 1) illustrate significant differences in rates of change between PBC and PBD over time; 2) calculate rates of change for specific intervention time periods, measured here as units of change per month; and 3) illustrate significant group differences at each point in time (reported as effect size differences). Figures represent the combination of fixed and random main effect differences for the PBC vs. PBD conditions. For all reports of main effects we are referring to the coefficient representing time of exposure to the intervention in the HLM analysis.

Figure 6 illustrates the trend for teacher ratings of child behavior. For teacher rated social competence of grade K-2 children, results clearly depict an increase for PBC children in social competence over the two year intervention period. Other things being equal, one month exposure to the intervention resulted in an increase in social competence by .56 (p= .001) in the PBC condition relative to the PBD condition (see Table 8). The aggregate mean for social competence increased from 70.32 at baseline to 80.10 at 18 months for the PBC condition and from 67.07 to 71.21 for the PBD condition. Social competence increased fastest for the PBC group in the 6 months immediately following baseline and continued to increase through 18 months post-intervention. While there were group differences at baseline (effect size d= .34), the groups were also significantly different at 12 months (d= .63) and at 18 months (d= .53).

Figure 6. Teacher Reported Child Behavior





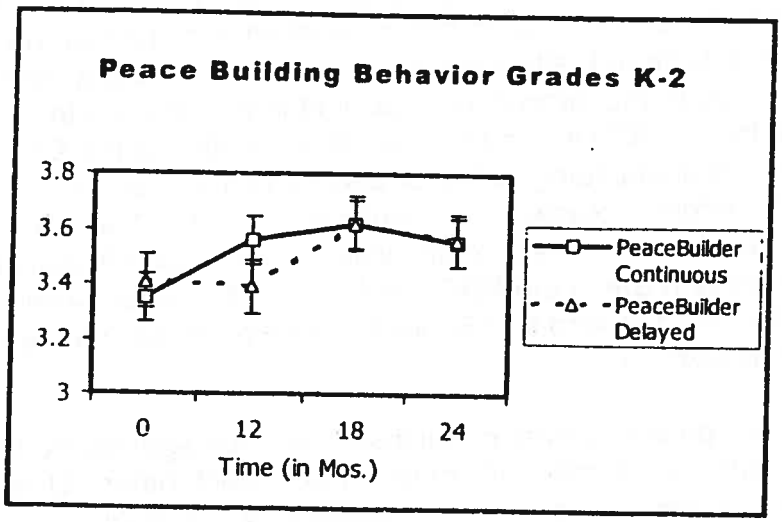


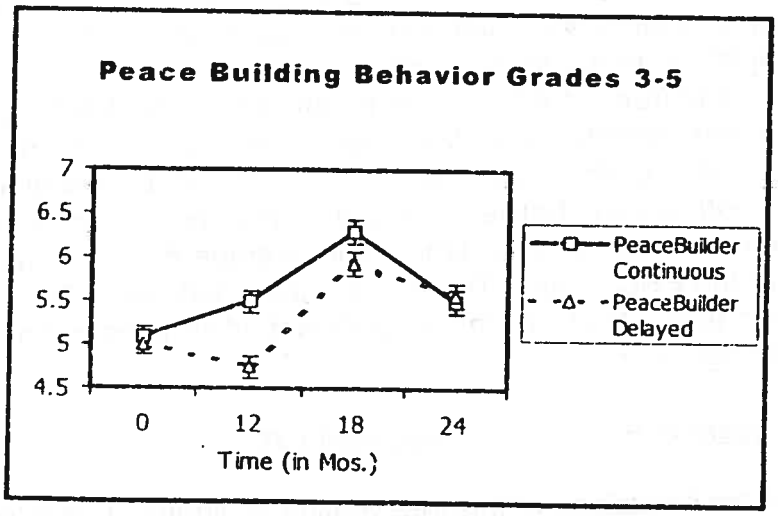
For children in grades 3-5, one month exposure to the intervention resulted in an increase in social competence by .44 in the PBC condition relative to the PBD condition (p= .001; Table 8). The aggregate mean for social competence increased from 70.51 at baseline to 77.88 at 18 months for the PBC condition and from 68.76 to 70.69 for the PBD condition. Similar to the growth rate for K-2 grade children, social competence increased most in the period 6-12 months post-intervention for the PBC group (.532 units/ month). Post-intervention increases in social competence for the PBD group, however, were negligible. The PBD group increased in social competence .318 units/month during baseline, decreased .001 units/month from 6-12 months, and increased .005 units/ month from 12-18 months. The groups were not significantly different at baseline or at 6 months, but significant group differences were observed at 12 months (d= .29) and 18 months (d= .46).

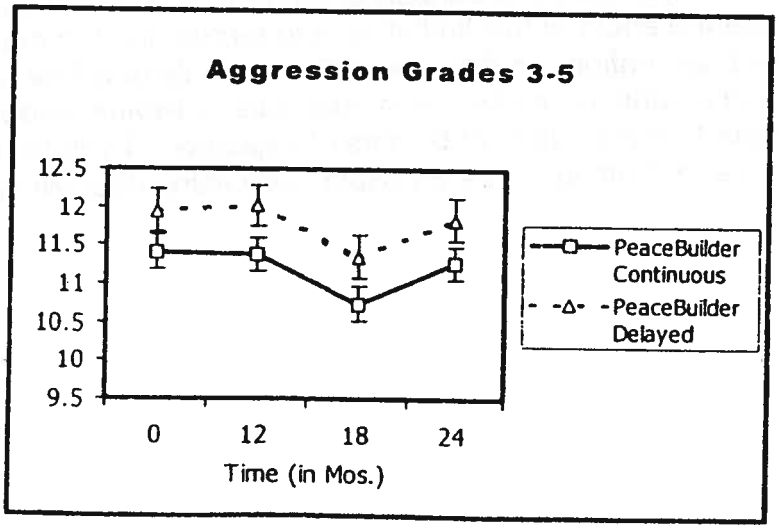
Teacher rated aggression for children in grades 3-5 show decreases in aggressive behavior occurring in both groups from 6-12 months, but the rate of change was not significantly different for the two groups. One month exposure to the intervention resulted in a decrease in aggressive behavior by -.026 in the PBC condition relative to the PBD condition, but this decrease was not significant. Teacher rated aggression decreased from 33.01 at baseline to 31.43 at 18 months for the PBC condition and from 32.90 to 32.18 for children in the PBD condition. Aggression for PBC children declined most in the period 6-12 months post-intervention (-.453 units/ month), but increased again .138 units/month in the 12-18 month period. As expected, aggressive behavior actually increased in the PBD group during the 0-6 month baseline period (.206 units/month). The groups were indistinguishable on aggression at baseline, but were significantly (albeit moderately) different at 12 months, with lower aggression among PBC children (d= .16). There were no significant differences in rate of change for teacher rated aggression of K-2 children.

Figure 7 illustrates significant trends for child self-reported behavior change over the two-year intervention. For peacebuilding behavior, K-2 grade children peaked in both conditions at 12 months before declining slightly at 18 months. One month exposure to the intervention resulted in an increase in peace building by .014 (p= .06) in the PBC condition relative to the PBD condition. Peace building behavior increased from 3.35 at baseline to 3.62 at 12 months for the PBC condition and from 3.41 to 3.62 for the PBD condition. Similar to findings for social competence, peacebuilding behaviors increased most for both groups in the first 6 months post-intervention. The groups were not different at baseline, but as expected there was a significant difference at 6 months (d= .39) favoring youth in the PBC condition. This difference dissipated after both groups had received the intervention, as the groups were indistinguishable at 18 months.

Figure 7. Child Self-Reported Behavior







Self-reports of child peacebuilding behavior in grades 3 through 5 are closer to a quadratic trend over the two school years (Figure 7). Similar to results for K-2 children, peacebuilding behavior for both groups peaked in at 12 months before declining during the 12-18 month period, although to a level still significantly above baseline levels. One month exposure to the intervention resulted in an increase in peacebuilding behaviors by .11/ month (p= .001) in the PBC condition relative to the PBD condition. Alternatively, peacebuilding behavior declined after baseline in the PBD group -.045 units/ month before increasing .198 units/month in the first 6 months post-intervention. The groups were not different at baseline, but were significantly different at 6 months (d= .39) favoring youth in the PBC condition. Differences between groups were smaller at 12 months (d= .18), and by 18 months were no longer distinguishable on peacebuilding behavior.

The two growth curves of child self-reported aggressive behavior for children in grades 3-5 were not significantly different from each other. One month exposure to the intervention resulted in a decrease in aggressive behavior by -.008 in the PBC condition relative to the PBD condition. Like the trend for teacher reported aggression this decrease was not significant. Self-reported aggression for children in grades 3-5 decreased slightly in both groups, from 11.41 at baseline to 10.74 at 12 months for the PBC condition and from 11.95 to 11.36 for children in the PBD condition. Aggression for children in both conditions declined most in the period 6-12 months post-intervention, -.106/ month for PBC and -.108 for the PBD condition, but increased again .08/month for both groups between 12 and 18 months. The groups were marginally different from each other at each time point (average d= .15) favoring lower scores on aggression for the PBC group. There is no clear treatment effect for child self-reported aggressive behavior. There were no significant differences in rate of change for child K-2 self-reported aggression.

Analyses for years of exposure to Peacebuilders.

One of the limitations of this intervention evaluation is the lack of an ongoing non-intervention comparison group of schools or students. One strategy we have employed to try to minimize the effect of this limitation is to reorganize the data by years of exposure to the intervention. In this model, the students at follow-up (Times 5, 6, and 7) can be placed on a continuum of years of exposure to Peacebuilders, ranging from no years of exposure to a maximum of 5 years of exposure. To date, we have examined years of exposure to Peacebuilders retrospectively using data for students at Times 5 and 6.

Sample size at Times 5 and 6 for years of exposure to Peacebuilders:

	Time 5	Time 6
No exposure to Peacebuilders	1674	1243
1 year exposure to Peacebuilders	1493	474
2 year exposure to Peacebuilders	1010	430
3 year exposure to Peacebuilders	383	292
4 year exposure to Peacebuilders	N/A	152

Results for years of exposure to Peacebuilders:

We conducted three-way ANOVAs to investigate the effects of years of exposure, gender and grade on the following teacher-reported dependent variables: social competence, aggression, and delinquency. The analyses were conducted for both the sample at Time 5, and the sample at Time 6. In general, as we did not find any significant interaction effects for years of exposure and gender, results are reported for the total sample combining males and females.

For both analyses at Time 5 and Time 6, and for all three dependent variables, we found significant main effects for years of exposure, gender and grade (see Table 10). A significant years of exposure and grade interaction was significant at Time 5 ($F(11,4556)=4.08$, $p<0.001$) and Time 6 ($F(11,1910)=2.65$, $p<0.01$) for social competence, and at Time 6 for delinquency ($F(13,2546)=2.93$, $p<0.001$). A significant years of exposure and gender interaction was significant at Time 5 for delinquency ($F(3,4557)=3.05$, $p<0.05$) and at Time 6 for aggression ($F(13,2588)=3.02$, $p<0.05$). None of the three-way interactions was significant.

Although more analyses needs to be done, it is promising that the main effect of years of exposure was significant for all the dependent variables, for both samples at Time 5 and Time 6. As seen in the Figures illustrating trends for years of exposure to Peacebuilders (see Figures in Appendix IX), social competence improves as the amount of children's exposure to the Peacebuilder intervention increases. The graphs also show that aggression and delinquency decrease as the amount of children's exposure to the Peacebuilder intervention increases, for both the overall scales and for

individual items. Many of these trends are not significant relative to baseline until two years (social competence) or three years post-intervention (aggression and delinquency) (Flannery, 2000).

Table 10. Main effects on the dependent variables for analyses of Time 5 and Time 6 samples.

		Dependent Variables		
		Social Competence	Aggression	Delinquency
Independent Variables	**Time 5 Analysis**			
	Years of exposure	F(3,4556)=24.22, p<0.0001	F(3,4556)=3.55, p<0.05	F(3,4557)=6.14, p<0.001
	Gender	F(1,4556)=96.01, p<0.0001	F(1,4556)=132.15, p<0.0001	F(1,4557)=68.15,p <0.0001
	Grade	F(4,4556)=18.61, p<0.0001	F(4,4557)=3.95, p<0.0001	F(4,4557)=6.38, p<0.0001
	Time 6 Analysis			
	Years of exposure	F(4,1910)=4.99, p<0.001	F(4,2588)=3.35, p<0.01	F(4,2587)=2.59, p<0.05
	Gender	F(1,1910)=8.96, p<0.01	F(1,2588)=16.79, p<0.001	F(1,2587)=8.35, p<0.01
	Grade	F(4,1910)=0.46, p=0.71	F(4,2558)=3.59, p<0.01	F(4,2587)=4.95, p<0.001

By definition, students in a middle school did not receive exposure to the intervention in that year. Two issues still have to be dealt with analytically before we can draw more definitive conclusions about this data: 1) the confound between years of exposure and child age; by definition, students with more years of exposure to the intervention were younger when first exposed, a developmental factor that may impact the degree of intervention effectiveness or the likelihood that its effects will be sustained over time; and 2) some middle school students who were exposed to the intervention in elementary school may be one or two years removed from that exposure (e.g. a 7th grader who was exposed for two years in 4th and 5th grades but has received no intervention for the two years in middle school). This student with two years of exposure may be different from the student whose last data collection reflects two consecutive years of exposure (e.g. a 5th grader who was exposed for two years in 4th and 5th grades and who has no data after that point).

Limitations

Conducting program evaluation on a large number of students in predominantly urban, mobile school populations presents many empirical and practical challenges not easily overcome. First, Peacebuilders attempted to alter individual child behavior with a

universal intervention aimed at changing the environment. This is particularly challenging given the highly stable nature of aggressive behavior (Eron & Huesmann, 1990; Huesmann & Moise, 1999), and the difficulty of maintaining the fidelity of a school-wide intervention over several years of implementation. Second, while comparable to other large scale survey studies, the attrition in this sample was relatively high, a common occurrence among schools in higher risk areas with frequent student mobility (Hansen, Tobler & Graham, 1990). Limits also exist on the extent to which one can control a child's exposure to other school and community programs or events that may impact the outcome behavior being examined. We took several steps to retain the cohort's degree of exposure to the intervention. For example, PBD schools agreed not to implement other violence prevention curricula during the year they were controls, and we removed from our sample children in the PBC condition in year 2 who were not also present in year 1. Finally, implementation of the program will vary by school and by classroom. It is important to examine the quality, intensity, and fidelity of program implementation over time and its impact on behavior change (Reid et al., 1999).

Methodologically, there are also several significant challenges to doing large scale preventive intervention work. Every school we approached to ask about participating in the project expressed high need for immediate intervention and were uneasy about the prospect of even a one-year non-intervention period. Despite offering monetary incentives to schools to remain in a control condition, it is very difficult to withhold interventions from schools that have need for immediate help. Matters are further complicated when you not only want to withhold intervention, but when you also request to gather detailed survey or observational data from teachers and students. This impacts one's design because of the lack of an ongoing non-intervention control group.

In addition to the non-intervention control problem, large scale intervention studies also face attrition at the school level, with schools sometimes dropping out of the project. This may be due to changes in administrators, changes in school district policy, reductions in resources, changing academic demands (e.g. proficiency testing) or changes in teacher staff over the years to the point that staff are no longer willing to implement a program (e.g. CPPRG, 1999; Reid et al., 1999). We need to balance the gains from doing large scale preventive interventions with the research design and method limitations that occur when attempting to bridge science with practice (Flannery & Huff, 1999).

Additional limitations/ challenges for this project:

• Inconsistent data collection on fidelity of implementation. While we took several steps to try to assess the fidelity of program implementation (e.g. asking teachers about their use of materials and satisfaction with program materials and training and conducting school walk-throughs), the scope of the project grew beyond the relatively limited resources for longitudinal data collection. Therefore, the follow-up focused more on teacher and student surveys than on ongoing assessments of the fidelity of program implementation. Future studies in the violence prevention arena should pay significant

attention to intervention fidelity and quality of implementation, as this is now being shown to be a significant mediator of behavior outcomes.

• Non-participation by one district in year 5 (time 6). Administrative and personnel changes in the research department late in the school year resulted in one of the two districts not participating in data collection at Time 6. While this was through no particular fault of project staff (the district rejoined data collection at Time 7), this will create a significant gap in the longitudinal design of the project.

• School mandated changes to survey instruments. An additional challenge to the longitudinal design was TUSD's decision, after not participating at Time 6, to request some modifications to the teacher and student surveys that had been employed at Time 5. Specifically, they asked us to remove some of the more "sensitive" items, including child self-reports of exposure to violence at home, student self-reports of substance use, and teacher reports of student gang involvement. The Sunnyside district retained the same survey throughout the follow-up. These seemingly minor changes in the survey instrument created many administrative, procedural and data management and tracking challenges for project staff.

• Gaining active parental consent from parents in highly mobile families. TUSD's decision to employ active parental consent created several procedural challenges to collecting survey data from a large number of students, particularly in middle schools where there are many more students than in elementary schools, and whether neither the schools nor the majority of the students had a history of taking part in the intervention and evaluation project. After five years, staff at most of the intervention elementary schools and parents were very familiar with the Peacebuilders program and with the annual evaluations being conducted. This was not true of follow-up middle schools, and project staff spent a great deal of time establishing rapport with staff and working out data collection procedures that fit in to the middle school structure. The only way this worked at all was by having a local full time data management coordinator (Dr. Yellott) who had previous experience with staff in the school district; by paying staff at individual schools to assist us with data collection procedures for students and other staff; and by paying individual teachers to complete student surveys. We also provides schools with stipends for their general funds depending on return rates for teacher surveys.

• School redistricting. One of our participating districts (Sunnyside) revamped their district's school boundaries in year 4 (Time 6) which resulted in a significant number (approximately 120) of our project students, primarily Native American students, to be moved to non-project schools. The CDC did provide some additional resources so that we could gather data specifically on these children, but this also presented particular challenges with data management and tracking.

Despite the limitations inherent in large scale applied evaluation research, this program also has many strengths. The sample was large and ethnically diverse, including a large sample of Hispanic and Native American children, two groups rarely

included in longitudinal studies of violence prevention programs. The children were younger and covered a broader age range than previous longitudinal evaluations (Grossman et al., 1997) and schools were from both urban and suburban districts. While our focus here was on the first two years of exposure to the intervention, we have continued to gather outcome data from children as they mature through middle school (grades 6-8), over a five year period. Assessing outcomes such as aggression, delinquent and violent behavior and violence exposure/ victimization as a function of years of exposure to an elementary school-based universal preventive intervention may yield more information about age of first exposure effects, developmental trajectories for subgroups of children (e.g. high aggressive youth with low social competence vs. high aggressive youth with high social competency), or differences in program effectiveness related to gender as children mature (Flannery, 2000).

Conclusions

Initial results of this preventive intervention trial show significant improvements over time for teacher rated social competence and student self-reports of peacebuilding behavior, illustrating that a universal school-climate changing intervention can significantly improve child social competence. Findings for aggressive behavior are less consistent or robust, although behavior at 18 months post-intervention was lower than baseline levels in both groups. This may reflect the general stability of aggressive behavior over time, and suggest that more intensive, long-term site-based and targeted behavioral efforts may be necessary as a complement to universal approaches before any significant reductions in aggressive behavior are realized.

Additional data management tasks

• school and juvenile court archival data still need to be integrated into the final longitudinal survey data set

• we plan to use our excel tracking data base to assign values for socioeconomic status to children based on statistical planning area demographic data. Depending on the complexity of this task, we may assign codes based on school attended or zip code. This data base can also be used to track student mobility

• Data cleaning, particularly in the merged longitudinal database, is ongoing and occurs periodically depending on the variables being examined. This also includes whether we impute data for missing values on selected scales

Additional program materials, descriptive data analyses, and information on data collection procedures and protocols are available from the project principal investigator: Daniel J. Flannery, PhD, Professor and Director, Institute for the Study and Prevention of Violence, 315 Merrill Hall, Kent State University, Kent, OH 44242.

Appendices

I.

Tables and Figures Cited in Report
Nurses' Office Visits (King et al 1997)
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Project Schools by Wave at Baseline
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Sample Size Reconstruction
Absence Tracking
Survey Response Rate Tracking Form Times 5-6

II.

Teacher Consent Form 1999
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Workgroup Instructions
Sample Student Tracking Lists for Workgroups

III.

Data Collection Matrix
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Child Self Report, Grades 3-6 in English
Child Self Report, Grades 3-6 in Spanish
Child Self Report, TUS D 1999, Grades 4-8 in English
Child Self Report, TUSD 1999, Grades 4-8 in Spanish
Child Self Report, Sunnyside 1999, Grades 4-8 in English
Child Self Report, Sunnyside 1999, Grades 4-8 in Spanish
Child Self Report, TUSD 1999, Grades 4-6 in English
Teachers Survey, TUSD 1999, Grades 4-6

IV.

Additional Information on Data Collection Procedures

V.

K-2 Child Self-Report Survey Items and Results T1-T4
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VI.

Teacher Training and Interventions Questionnaire and Results
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VII.

Tracking Data Set Scales and Outcomes
Initial Summary T1-T6

VIII.

Child and Teacher Code Book for Data
List of Data Files
Description Input Data Statements

IX.

Figures on Years of Exposure to PeaceBuilders

X.

Publications

Embry, D., Flannery, D., Vazsonyi, A., Powell, K., Atha, H., (1996) PeaceBuilders: A theoretically driven, school-based model for early violence prevention: American Journal of Preventive Medicine (Vol. 12), 5

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Flannery, D. (1994, February). The challenges of outcome evaluation research. Centers for Disease Control Workshop on youth violence. Atlanta, GA. **Invited.**

Flannery, D. (1994, April). Problem behavior and violence in childhood and adolescence. Canadian Mental Health Association, Brandon, MB Canada. **Invited.**

Flannery, D. (1995, December). Violent environments, violent children: Issues of risk and resiliency. National conference "Violence and childhood trauma: Understanding and Responding to the effects of violence on young children." Urban Child Research Center, Cleveland State University. **Invited**

Embry, D., & Flannery, D. (1996, March). Peace Builders: Primary prevention of youth violence. Society for Research on Adolescence, Boston, MA. **Invited.**

Flannery, D. (1996, March). Understanding and Preventing Violence. Armington Conference on Children: Addressing Issues of Poverty, Violence, and Neglect. Cleveland, OH. **Invited.**

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Flannery, D. (1999, October). Identifying Risk Factors for Youth Prone to Violence. Michigan Partnership to Prevent Gun Violence & Michigan Council on Crime & Delinquency, East Lansing, MI. **Invited Keynote.**

Flannery, D., Singer, M., Wester, K., & Biebelhausen, L. (1999, November). Relationship between threats of violence and violent behavior. American Society of Criminology, Toronto, CA.

Flannery, D., (1999, November). What can we do about violence in Schools? Ohio Center for Law Related Education. Columbus, OH. **Invited.**

Flannery, D., Singer, M., Biebelhausen, L., & Wester, K. (2000, March). Threats and interpersonal violence in early and mid- adolescence. Society for Research in Adolescence, Chicago, IL.

Flannery, D. (2000, April). Exposure to violence, violent behavior and mental health. CME, Case Western Reserve University, Cleveland, OH. **Invited Keynote.**

Flannery, D. (2000, April). How to handle violent students and employees. Fourth Annual Texas Higher Education Law Conference, University of North Texas. Denton, TX. **Invited Keynote.**

Flannery, D.(2000, April). Treatment and mental health issues of juvenile offenders. Annual Spring Conference on Criminal Justice, Illinois State University, Normal, IL. **Invited Keynote.**

Flannery, D. (2000, August). Longitudinal effectiveness of the Peacebuilders universal school-based violence prevention program. American Psychological Association, Washington, DC. **Invited**

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Flannery, D. (2000, October). Improving school violence prevention programs through meaningful evaluation. Western Regional Safe Schools Conference, National Resource Center for Safe Schools. Reno, NV. **Invited Keynote and Workshop.**

Liau, A., & Flannery, D. (2000, November). Factors that influence the progression and desistance of antisocial behavior. American Society of Criminologists, San Francisco, CA.

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Flannery, D. (2001, January). Gauging your progress: Evaluating your program. U.S. Department of Justice, Office of Juvenile Justice and Delinquency Prevention, JAIBG program training, "Community-based programs that work in schools" Houston, TX. **Invited Plenary.**

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