

Creating a Peaceful School Learning Environment: A Controlled Study of an Elementary School Intervention to Reduce Violence

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Objective: The impact of a manual-based antiviolence program on the learning climate in an elementary school over 4 years was compared with the outcome in a control school.

Method: The two schools were matched for demographic characteristics. The intervention in the experimental school was based on zero tolerance for bullying; the control school received only regular psychiatric consultation. Disciplinary and academic achievement data were collected in both schools.

Results: The experimental school showed significant reductions in discipline referrals and increases in scores on standardized academic achievement measures.

Conclusions: A low-cost antiviolence intervention that does not focus on individual pathology or interfere with the educational process may improve the learning environment in elementary schools.

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There is an array of programs to prevent school violence, but few have been evaluated. Exceptions include a randomized study (1) validating the effect of the Second Step: A Violence Prevention Curriculum on elementary school children, in which persistent decreases in physical aggression were observed, and Olweus's naturalistic study of 42 schools in Norway (2), in which a decrease in violence due to pathological bullying, primarily in grades 4 through 7, was reported. Olweus's program has been adapted for North America, so far with limited success (3).

In this article, we report a pilot study of a social systems/psychodynamic antiviolence intervention in an elementary school focused on dealing with the complex dialectical relationships among victims of violent attack, their victimizers (the bullies), and the bystanders (observers). The essence of this approach is that victims, victimizers, and bystanders are targeted simultaneously, without ascribing pathology to any individual. All children participate, with the healthier children assisting the more disturbed children, thus potentially avoiding the possible stigmatization and cost of medical labeling and referral. In a previous publication (4), we postulated that "Schools can be stages for dramas involving the interplay of the villains (bullies) and the antagonists (victims) sustained by the audience of bystanders." Teachers and other school personnel (e.g., security staff, lunchroom aides, and even school secretaries) can assume any one of the roles in the triad of victim, bully, and bystander, and thus they must also be closely involved in the program.

The program consisted of four components: 1) zero tolerance for behavioral disturbances such as bullying, victimization, and standing by during violent acts, 2) a discipline plan for modeling appropriate behavior, 3) a physical education plan designed to teach self-regulation

skills, and 4) a mentoring program for adults and children to assist children in avoiding one of the three preceding roles. Component one worked by increasing cognitive skills and awareness of roles and by changing language usage. Component two was directed at viewing any behavioral disturbance as an interaction of all three roles in the triangle so that discipline focused on this process rather than attributing pathology to the bully. A time for reflection on the process was set aside each day. Component three taught self-regulation skills in physical education classes through martial arts, role playing, and story reading, with attention to anger management and encouraging adoption of one or more of these three roles during conflict. Component four emphasized adult and peer mentoring efforts focused on playground, lunchtime, and school corridor conflicts.

Method

Staff at both of the inner-city elementary schools in this study were concerned about high levels of disciplinary problems and serious fighting, occasionally necessitating police intervention. The experimental and control schools did not differ significantly on any demographic variable, each was located in a part of town characterized by lower socioeconomic levels, they both had new principals, and they had similar class sizes, ethnic breakdowns, family structures, percentages of students receiving general assistance, and percentages in special education programs. Written informed consent for participation in the program was obtained from the parents of all students in the school after the procedure had been fully explained; 95% of the student population received permission to participate.

Teacher in-service training for the intervention in the experimental school began in October 1994. The intervention was fully implemented over the next year, and it was actively supported over the next two academic years. In the 1997-1998 year, the program was running independently with minimal support from the

TABLE 1. Metropolitan Achievement Test Scores of Students in an Elementary School Receiving an Intervention to Reduce Violence and in a Control School

Test Measure, Group, and Year	Experimental School			Control School			Year-by-School Interaction							
	N	Percentile		N	Percentile		ANOVA			Repeated Measures MANOVA				
		Mean	SD		Mean	SD	F	df	p	Wilks's Lambda	F	df	p	
Composite														
Third graders in consecutive years							3.57	2, 176	0.04					
1995–1996	48	40.4	20.6	28	42.4	21.8								
1996–1997	27	50.0	23.6	37	36.6	28.2								
1997–1998	26	58.3	22.4	26	39.2	20.5								
Children in third grade at baseline										0.936	7.36	1, 108	0.008	
Third grade, 1995–1996	46	43.0	19.0	64	38.5	25.7								
Fifth grade, 1997–1998	46	55.1	26.4	64	41.4	27.5								
Reading														
Third graders in consecutive years							3.01	2, 186	0.052					
1995–1996	48	38.2	21.3	28	45.5	24.9								
1996–1997	27	41.7	23.4	37	37.7	27.7								
1997–1998	26	55.7	24.9	26	40.7	23.9								
Children in third grade at baseline										0.940	6.89	1, 108	0.01	
Third grade, 1995–1996	46	45.9	24.8	64	41.5	26.5								
Fifth grade, 1997–1998	46	52.9	28.2	64	40.0	30.0								
Mathematics														
Third graders in consecutive years							8.50	2, 186	0.0003					
1995–1996	48	45.1	21.2	28	50.5	26.4								
1996–1997	27	62.1	23.9	37	33.9	25.6								
1997–1998	26	60.7	24.9	26	41.7	25.7								
Children in third grade at baseline										0.993	0.76	1, 108	0.39	
Third grade, 1995–1996	46	48.8	25.4	64	41.5	27.1								
Fifth grade, 1997–1998	46	57.8	25.0	64	46.9	27.2								

research team. The personnel for both schools volunteered their time, and approximately \$1,500 was spent in each school for materials. Support for data entry, analysis, and write-up was provided by a grant from the City of Topeka and The Menninger Clinic. Both schools received consultation from senior psychiatric consultants, and no additional mental health consultation was provided to either school throughout the intervention. The control school's consultation focused on traditional medical assessment and referral; the experimental school's consultant supervised the new program.

Academic achievement was assessed by using the Metropolitan Achievement Test (5), a comprehensive nationally standardized battery of tests designed to measure reading, written language, science, social studies, and research and thinking skills. Its validity and reliability have already been established.

Each of 27 serious disciplinary infractions and suspensions was reported by the principal to the school district, on an official disciplinary referral form, after referral by the class teacher. There was good agreement between teachers on measures of the seriousness of disciplinary infractions (intraclass correlations=0.83–0.94).

A detailed report on the instruments and study results is available from Dr. Twemlow on written request.

Results

There was a dramatic reduction in disciplinary referrals in the experimental school associated with the introduction of the program: from 74 for physical aggressiveness in 1994–1995 to 34 in 1995–1996 and 36 in 1996–1997 and from 162 for other infractions in 1994–1995 to 97 in 1995–1996 and 93 in 1996–1997. The control group showed little change in the rate of reported infractions: 63 aggressive infractions in 1994–1995 and 63 and 62 in 1995–1996 and 1996–1997, respectively, and 160 nonaggressive infrac-

tions in 1994–1995 and 166 and 130 in 1995–1996 and 1996–1997.

Suspension rates were calculated as the number of out-of-school suspensions per student multiplied by 100. Differences between schools were calculated by using the Fisher exact test and were not statistically significant for any year between 1991 and 1994. The suspension rates for the experimental school were significantly lower for 1995–1996 ($p<0.02$) (about 9%), 1996–1997 ($p<0.05$) (about 6%), and 1997–1998 ($p<0.004$) (about 4%). The suspension rates for the control school did not vary significantly, ranging between 14% and 19%.

The Metropolitan Achievement Test is given to students only in the third grade and fifth grade. The data on academic achievement, reported in Table 1, were analyzed in two ways. First, the average performance of the third graders in the experimental and control schools was examined for each academic year from 1995 through 1998. The analysis of variance of the Metropolitan Achievement Test composite scores yielded a significant year-by-school interaction, confirming a significant improvement in the performance of the experimental school (from the 40th percentile to the 58th percentile), whereas the control school did not change over the same time period. Data from the two key subtests of the Metropolitan Achievement Test (reading and mathematics) confirmed these findings.

Second, in order to explore whether individual students improved their performance over the time period, a multivariate analysis of variance was performed to compare the percentile scores of the same cohort in the third grade (in

1995–1996) and fifth grade (in 1997–1998). The analysis yielded significant school-by-time interactions for the composite score and for the reading score but not for the mathematics score. These analyses indicate that not only did the school's overall performance improve over the period of the program but individual students' performance improved significantly more in the experimental school than in the comparison school.

Discussion

Significant improvement in academic achievement and reduction in out-of-school suspensions and other serious infractions were associated with the experimental but not the control program. Reports from school teachers suggested that many previously passive and withdrawn victimized children often became more verbal and outspoken as the program progressed.

The teachers also reported that the children shifted to a less anxiety-provoking, more relational mode of functioning, became more reflective (6) and less reactive, and developed response options that did not include bullying, coercion, or anxious-depressed retreat. The stability of the intervention is suggested by the continued progress in the experimental school in the final year of the study, when little support was given by the research team (7).

This study has several limitations. First, the allocation of experimental and control status was not random. Some regression to the mean would be expected in view of the high initial number of suspensions in the experimental school. However, the observed improvement went considerably beyond control levels. Second, the program had multiple components, and at this stage we do not know whether all are essential. Last, to establish the program as effective it needs to be implemented in several randomly selected schools simultaneously. This step commenced in

1999–2000 in a randomized controlled study of nine elementary schools in Topeka, Kan.

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References

1. Grossman D, Neckerman H, Koepsell T, Liu P, Asher K, Beland K, Frey K, Rivara FP: Effectiveness of a violence prevention curriculum among children in elementary school. *JAMA* 1997; 227:1605–1611
2. Olweus D: Bullying among schoolchildren: intervention and prevention, in *Aggression and Violence Throughout the Lifespan*. Edited by Peters R, McMahon R, Quincy V. London, Sage Publications, 1992, pp 100–125
3. Limber SP, Nation MM: Bullying among children and youth, in *Combating Fear and Restoring Safety in Schools*. Edited by Arnette JL, Walsleben MC. Washington, DC, US Department of Justice, Office of Juvenile Justice and Delinquency Prevention, 1998, p 5
4. Twemlow SW, Sacco FC, Williams P: A clinical and interactionist perspective on the bully-victim-bystander relationship. *Bull Menninger Clin* 1996; 60:296–313
5. Metropolitan Achievement Tests, 7th ed. San Antonio, Tex, Psychological Corp (Harcourt), 1993
6. Fonagy P: An attachment theory approach to treatment of the difficult patient. *Bull Menninger Clin* 1998; 62:147–169
7. Twemlow SW, Sacco FC, Twemlow S: *Creating a Peaceful School Learning Environment: A Training Program for Elementary Schools*. Agawam, Mass, T&S Publishing Group, 1999