Long-term Effects of the *Positive Action*[®] Program

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Objective: To report long-term effectiveness of the *Positive Action* program. *Methods*: Used matched-schools design and schoollevel achievement and disciplinary data to evaluate program effects on student performance and behavior in elementary schools. *Results*: Participation in the *Positive Action* program improved student behavior, school involvement, and academic achievement at all 3 levels of schools, with the results

We and others have argued that a wide range of youth behaviors are related and have common causes^{1.4} and that effective positive youth development needs to combine the principles of effective character development, health promotion, disease prevention, and academics.^{1,5,6} However, schools cannot afford to use different programs to address each of these areas. Administrators, teachers, legislators, and the public are calling for a comprehensive approach.

A number of different kinds of programs have been developed to address problems of academic achievement,⁷ smoking,^{8,9} substance use,¹⁰ violence,¹¹ showing a clear dose-response relationship. *Conclusion*: Results provide clear evidence that a coherent, comprehensive, and integrated program can have enduring effects in multiple domains.

Key words: positive youth development, comprehensive programs, problem behaviors, prevention, health promotion, academic achievement

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and many other areas. Although many of these programs are initially promising, most are problem specific and unable to provide sustainable effects. Most programs address the micro-level predictors of problem behavior and do not attempt to affect the multifaceted, distal factors. A comprehensive approach that includes selfconcept development, schoolwide environmental change, and parental and community involvement may successfully affect all outcomes together. Recent changes in Title 1 legislation have acknowledged and facilitated the development/funding of comprehensive school reform programs; however, there are few that have been fully evaluated.

The behaviors of children and adolescents are highly correlated and have many of the same risk and protective factors; and behavior, school involvement, and academic achievement are related (see Flay¹ for a review). We need to address student character development, behavior, school involvement, and learning in a comprehensive and integrated way. The present paper reports on the long-term effectiveness of one program that pro-

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vides schools with the means to achieve this.

The *Positive Action* Program

A detailed description of the theoretical basis, program structure, and prior evaluations of the *Positive Action* program (PA) can be found elsewhere.⁶ Here we summarize aspects of PA, with an emphasis on its comprehensiveness.

Theoretical basis. The PA program is grounded in a broad theory of self-concept¹²⁻¹⁴ that posits that people determine their self-concepts by what they do; that actions, more than thoughts or feelings, determine self-concept; and that making positive and healthy behavioral choices results in feelings of self-worth. Recent studies in positive psychology¹⁵ support this notion; eg, Fredrickson¹⁶ found that when children feel positive, they have more positive thoughts and engage in more positive behavior.

more positive behavior. PA is also consistent with educational theories of brain development,¹⁷ higherlevel thinking skills,¹⁸ multiple intelligences,^{19,20} and social and emotional learning.²¹ PA teaches children what actions are positive, that they feel good when they do positive actions, and that they then have more positive thoughts and future actions. By explicitly linking thoughts, feelings, and actions, the program is believed to enhance the development and integration of affective and cognitive brain functions.²²

Consistent with multiple social learning theories²³⁻²⁶ and a wide array of theories of behavior change integrated into Flay's theory of triadic influence,^{27,28} PA also trains teachers, other school staff, and parents to identify and reinforce positive feelings, thoughts, and actions by students, leading to continual reinforcement of positive behavior and enhanced student bonding with parents and school. PA is also consistent with other current approaches to social development, health promotion, and prevention of unhealthy behaviors.^{10,29,30}

The PA model is very comprehensive, integrated, and holistic. Current mentalhealth problem, drug abuse or violenceprevention programs rely on providing knowledge, correcting normative beliefs, and teaching self-management and social skills.¹⁰ Recent approaches to improving academic achievement, even many of those classified as whole school reform, focus on enhancing particular curricular content and instruction methods¹⁸ or particular skills such as reading,⁷ but not many other needs of students. Current approaches to school ecology focus on parent involvement in school governance and reorganization, although not addressing the students' needs very effectively.³¹⁻ ³³ Each of these approaches attempts to identify and correct particular risk or protective factors.

PA is designed to affect more distal (and ultimately more important) influences on behavior and performance than most other programs affect. This is consistent with Flay's¹ suggestion that broad and long-term effectiveness in reducing problem behaviors and increasing school performance will require addressing more distal factors in a more comprehensive and integrated way. PA attempts this with a holistic approach to school reorganization, teacher-student relations, parent involvement, instructional practices, and development of the self-concept of students, teachers and parents.

Program structure. The PA program includes a detailed curriculum with almost daily lessons, a schoolwide climate program, and family- and communityinvolvement components, each of which uses research-proven educational strategies and methods such as active learning and positive classroom management. The program has goals and components for each of the individual, family, school, and community levels. Central to all components of the program are 6 program units (Table 1): (1) self-concept; (2) positive actions for one's mind and body; and 4 units that teach social/emotional positive actions for (3) managing oneself responsibly; (4) getting along with others; (5) being honest with oneself and others; and (6) improving oneself continuously.

Schools integrate the program units in a scoped-and-sequenced classroom curriculum and a school-climate program. The K-6 classroom curriculum consists of over 140 lessons per grade. Using teacher's kits (that include teacher's manuals and all materials needed for all activities for a whole class), classroom teachers present 15- to 20-minute lessons almost every day. Scripted lessons are completely prepared and teacherfriendly, employing a variety of methodologies and addressing different learning styles. Activities include stories, role-

Table 1Content of All Components (Classroom Curriculum,School-Climate Materials, Family Kit, and Community Kit)of the Positive Action Program

Unit # and Topic	Content
Unit 1 : Self-concept: What It Is, How It's Formed, and Why It's Important	The relationship of thoughts, feelings and actions (behavior). Units 2-6 teach children what actions are positive in various domains of life, that they feel good when they do positive actions, and that they then have more positive thoughts and future actions.
Unit 2 : Positive Actions for Body (Physical) and Mind (Intellectual)	Physical: exercise, hygiene, nutrition, avoiding harmful substances, sleeping and resting enough, safety. Intellectual: creative thinking, learning/studying, decision making, problem solving.
Unit 3: Social/Emotional Positive Actions for Managing Yourself Responsibly	Manage human resources of time, energy, thoughts, actions, feelings (anger, fear, loneliness, others), talents, money, possessions. Includes self-control.
Unit 4 : Social/Emotional Positive Actions for Getting Along With Others	Treat others the way you like to be treated, code of conduct (respect, fairness, kindness, honesty, courtesy, empathy, caring, responsible, reliable), conflict resolution, communicating positively (communication skills), forming relationships, working cooperatively, community service. [These are the essence of character education.]
Unit 5 : Social/Emotional Positive Actions for Being Honest with Yourself & Others	Self-honesty, doing what you will say you will do (integrity), not blaming others, not making excuses, not rationalizing; self-appraisal (look at strengths and weaknesses); and being in touch with reality. [These are the essence of mental health.]
Unit 6 : Social/Emotional Positive Actions for Improving Yourself Continually	Goal setting (physical, intellectual and social/emotional), problem solving, decision making, believe in potential, have courage to try, turn problems into opportunities, persistence.
Unit 7: Review	Review of all of above.

playing, modeling, games, music, questions/answers, activity booklets and sheets, posters, and manipulatives. The program content teaches students how to use positive actions, to recognize feeling good about themselves, to manage themselves (including thoughts, actions, and feelings), and to treat others the way they want to be treated.

The school-climate program encourages and reinforces the practice of positive actions schoolwide and extends the program to families and the community. For each school, a principal's kit³⁴ provides directions for a school-climate program to promote the practice and reinforcement of positive actions in the entire school. It also includes parent- and community-involvement activities.

The parent program (family kit,³⁵ see Gorsky³⁶ for a review) includes coordinated weekly lessons and links the family to the school activities. The family kit contains a manual with 42 multi-age, weekly lessons based on the 6 units and 6 review lessons with enough materials for 6 individuals. This kit coordinates family activities with the PA school curriculum and school-climate activities. It contains all the materials required in the lessons: colorful posters and visuals, hands-on materials, activity worksheets, and music. It contains Words of the Week and the "ICU Doing Something Positive

Box" like those used in the school.

The community program includes a community kit and combines with the school and parent programs to align all the environments (schools, families, and community) involved in the program. The community kit includes a guide, the *Positive Actions for Living*³⁵ text, music CDs and books, family kits, and other materials. It provides community leaders, public servants, social service workers, and business executives with the tools to plan and cultivate positive actions in every aspect of the community while encouraging development in every aspect of the individual citizen.

Prior evaluations of PA. PA was developed by the second author, a public school teacher at the time, over 6 years (1977-83) of planned pilot work, formative evaluation, revision, and further evaluation.³⁷ These evaluations consistently suggested that the program effectively improved student self-concept, behavior, school involvement, and academic achievement. Using before- and after-PA School Report Card (SRC) data, a wide array of elementary schools have documented strong improvements in achievement and decreases in problem behavior. For example, percentile rankings on standardized tests improved from as low as the 30th percentile to as high as the 90th percentile over the course of only 1 to 3 years. Some schools improved from being the worst in their district to being the best. Admittedly, these are not the average results that might be expected in a more controlled study.

In a more rigorous study,⁶ we used a matched-control design and school-level achievement and disciplinary data to evaluate program effects on student performance and behavior in 2 separate school districts. The program improved achievement by 16-52% and reduced disciplinary referrals by 78-85%. The study reported here extends prior work by replicating these results with improved methods in another large school district, and by investigating long-term effects when PA-exposed students graduate into middle and high school.

METHODS

Design

For this study, we chose one large southeastern school district that had schoollevel archival (SRC) data on student performance and disciplinary referrals/ac-

tions easily available for both elementary and secondary (middle and high) schools and that had a significant number of elementary schools that had implemented PA for 4 or more years. Some schools had never used PA or stopped using it 4 or more years before the 1997-98 school year (non-PA, n=28). Others had used it for 4 or more years prior to 1998 (PA-only, n=45), and others had also adopted other supplementary character/behavior programs, such as Skill Streaming, Peace Works, Peace-Able, or combinations of them, in addition to continued use of PA (PA+Other, n=20). We do not have formal data on the elective academic programs (eg, special reading or math programs) used in these schools during this time, but we do know that there was no correlation between whether a school had PA and the special academic programs they used. Each of the latter 2 groups of schools had used PA for an average of 7 years (range = 4-9 years). These 3 groups of schools were compared to assess program effects on elementary school student achievement and behavior.

We used school report card (SRC) data to find matching sets of one PA-only school, one PA+Other school and one non-PA (control) school. In order to find matched sets, we first rank-ordered all schools on percent free/reduced lunch, then on percent mobility (student turnover), and then we selected schools with similar ethnic distributions. These particular variables were chosen because for the non-PA schools in this school district, poverty (percent free/reduced lunch) was the strongest predictor of student performance (accounting for 57% of the variance), and percent African American students was the best predictor of disruptive behavior (accounting for 32% of the variance). Percent mobility was also a strong predictor of both behavior and achievement and the strongest predictor of attendance. These matching variables were not expected to change as a result of PA; therefore, they were presumed to imply pretest matching on the outcome variables of interest (behavior, attendance, and achievement). The PA schools in the resulting matched sets had used PA for 4 or 5 years.

Table 2 shows the comparability of the program schools and their matched control schools compared with all non-PA schools in the district (there were no

Table 2Differences between PA and non-PA Schools for Total Samplesand Matched Sets; 1998 and 1993 Demographic Data and 1993(pre-PA) Achievement and Behavior Data ^a										
	РА	All S <u>PA n=65, r</u> NonPA	Schools 1 <u>on-PA n=</u> S D	<u>28</u> P	Matched Sets <u>PA n=24, Control n=12</u> PA NonPA SD P					
1998 Demographic Data	b									
Enrollment	822	690	219.5	0.007	770	700	216.1	0.358		
% free/reduced lunch	52.60	69.90	25.03	0.002	62.20	67.60	22.21	0.502		
% mobility	41.75	50.78	17.37	0.021	43.83	49.46	15.71	0.318		
Student/teacher ratio	10.97	9.22	1.99	0.000	10.71	9.77	1.74	0.129		
% White	55.30	44.22	21.54	0.023	50.59	44.66	20.31	0.420		
% African American	22.32	28.39	18.98	0.161	24.61	28.48	19.62	0.587		
% Hispanic	18.25	24.13	14.91	0.083	20.71	23.23	15.46	0.653		
1993 Demographic Data	ь									
Enrollment	760	711	193.80	0.007	770	723	205.90	0.520		
% free/reduced lunch	49.90	62.90	21.52	0.002	57.60	59.50	19.92	0.794		
% mobility	43.60	53.36	16.67	0.021	47.58	51.83	15.40	0.444		
% Minority	22.32	28.39	18.98	0.161	41.58	41.67	16.44	0.989		
1993 Achievement and H	Behavio	ral Data ^b								
Reading % above median	43.63	35.36	15.32	0.016	37.25	36.50	12.32	0.866		
Writing % above 3	19.37	14.46	9.94	0.028	16.46	16.92	7.09	0.858		
Math % above median	50.60	44.11	13.68	0.035	46.29	44.92	12.70	0.764		
Absentee rate	6.15	6.85	1.18	0.007	6.29	6.77	1.07	0.203		
Suspensions	3.49	4.10	2.46	0.279	4.61	4.97	2.35	0.673		

a Means, standard deviations, and P values

b From 3 MANOVAs. There were no significant differences between PA and PA+Other conditions, so the 2 conditions were combined.

significant differences between PA-alone and PA+Other schools). PA schools were substantially different from non-PA schools, being at lower risk because they had lower proportions of students receiving free/reduced lunch, lower mobility rates, and lower proportions of minority students, but at higher risk because they were larger and had a higher studentteacher ratio. As expected, matched control schools were similar to PA schools, including on pre-PA (1993) indicators of achievement and behavior.

For analyses of the sustained effects of *Positive Action* into middle schools, we calculated the proportion of feeder elementary schools that had implemented PA for at least the prior 4 years. For analyses of the sustained effects of PA into high school, we calculated the pro-

portion of feeder schools that had implemented PA for at least the prior 8 years. In each case, we tried to ensure that students in the middle or high schools would have received at least 2 years of PA prior to the year of data available to us. We hypothesized a dose-response relationship, where middle and high schools with more students from elementary schools with PA (ie, PA graduates) would report lower average rates of problem behaviors and higher average achievement.

Measures

Elementary SRC achievement data consisted of mean scores on the Florida Reading Test and the grade 4 Florida Comprehensive Aptitude Test (FCAT) for the 1997-98 school year. Behavioral data consisted of disciplinary referrals for in-

Table 3 Effects of PA on Achievement and Behavior (1998) in Southeastern Elementary Schools (Means, Standard Deviations, P Values, ^a and Percent of Variance Accounted for in Model ^b)											
	<u>All s</u> PA	<u>chools (F</u> NonPA	<u>PA n=65</u> SD	<u>non-PA</u> P	<u>n=28)</u> %diff	<u>Matcl</u> PA	<u>hed sets</u> NonPA	<u>(PAn</u> SD	<u>=24, cor</u> P	<u>ntrol_n=</u> %diff	<u>(12)</u> R ²
Achievement Florida Reading Test	110.20	78.00	29.02	0.000	41.30	105.9	73.10	24.80	0.001	44.90	0.873
FCAT grade 4 total	295.20	283.10	19.01	0.006	4.30	290.9	278.40	19.30	0.000	4.50	0.968
Behavior											
Violence/100 students	5.40	8.74	7.31	0.049	38.20	3.83	12.11	5.94	0.000	68.40	0.965
% suspensions	2.52	3.58	2.05	0.057	29.60	2.72	4.09	3.16	0.003	33.50	0.836
, o buspensions											

a From ANOVAs for the All vs PA comparisons, and from multivariate GLM fixed effects (PA or not and matched controls) models for all matched controls analyses. Effects were marginally smaller in univariate GLM analyses, but multivariate analyses provide some adjustment for multiple comparisons. There were no significant differences between PA and PA+Other conditions, so the 2 conditions were combined.

b Multivariate GLM fixed effects (PA or not and matched pairs) model.

cidents of violence per 100 students, percent of students who received out-of-school suspensions, and percent of students absent for 21 or more days during the school year. Preliminary analyses found no differences between the PA-alone and PA+Other schools on outcomes; consequently, these 2 conditions were combined for the analyses reported.

Middle-school standardized achievement test data were the percent of students scoring above the median on the 8th-grade norm referenced tests (NRT) of reading and math (1997-98). Available indicators of behavior included incidents per 100 students of substance use (tobacco, alcohol, and illicit drugs), violence, dissing behaviors (disrespect, disobedience, disorderly, and disruptive), and property crimes (larceny, petty theft, and vandalism). All behavioral data were coded disciplinary referrals by school principals or disciplinary officers. Absenteeism data were also available.

High school standardized achievement test data (1997-98) were the percent of 10th-grade students scoring 3 or greater on the Florida Writes test, percent of seniors passing the High School Competency Tests (HSCT) of communications and math, mean Scholastic Aptitude Test

(SAT) scores, and mean American College Testing (ACT) composite scores. Percent absent 21 or more days and percent dropout were other indicators of school involvement. Behavioral data (1998-99) included disciplinary referrals for sub-stance use (tobacco, alcohol, and illicit drugs), violence (threatening, fighting, carrying weapons, and battery), dissing behaviors (disrespect, disobedience, disruptive, disorderly, and inappropriate dress), sexual behaviors (sex-related harassment, offences, and battery), property crime (arson, breaking and entering, theft, and vandalism), breaking of school rules, misbehavior on or near school buses, parking violations, and falsification of reports. Data on percent of students suspended (separately for in-school and outof-school) were also available.

Analyses

All analyses were conducted using SPSS version 10.1.³⁸ To estimate the effects of PA on elementary school achievement and behavior, we conducted analyses of variance and analyses of covariance (add-ing the 3 matching variables) for the comparison of all PA schools with all other schools. We conducted multivariate general linear modeling (GLM) with fixed



effects for condition and pair number (with pairs numbered in order of percent free/ reduced lunch for analyses of achievement and in order of percent African American for analysis of behavior) for the comparison of matched PA and non-PA schools.

To estimate the effects of receiving PA in elementary school on achievement and behavior in middle and high school, we conducted multivariate GLMs for each set of outcomes using percent PA students as the independent variable and using percent free/reduced lunch (available for middles schools only), school size, and percent mobility as covariates. For some outcomes, univariate models were necessary because different sets of covariates were significant or interacted with percent of PA.

RESULTS

Elementary School Results

Table 3 shows results for both the allschools and matched-controls analyses. In the all-schools analysis, scores on the Florida Reading Test were over 40% better in schools with PA compared to schools



without PA, and this effect was still significant after adding percent free/reduced lunch as a covariate (P=.003). In the matched-controls analysis, students in PA schools scored an average of 45% better than students in matched control schools. FCAT scores show a less dramatic improvement (4.3% in the allschools analysis and 4.5% in the matchedcontrols analysis, not significant after adjusting for percent free/reduced lunch).

In the matched-controls analysis, both main effects (of PA or not and matched set number) were highly significant, and the interaction was not significant. The lack of interaction suggests that PA was equally effective at all levels of school poverty (percent free/reduced lunch). Figure 1 shows that the effects were approximately the same regardless of level of poverty. However, the 27-point improvement for schools with a high proportion of students receiving free/reduced lunch represents a 41% improvement, whereas the 30point improvement for schools in the lowest tertile of poverty represents only a 30% improvement. Thus, the program

Table 4Differences between Middle Schools with 3 Levels of PAGraduates; 1998 Demographic Data and 1993 Achievement
and Behavior Data

	<u>% of S</u> <60% ^a	tudents PA (60-79% ^b	<u>Fraduates</u> 80-100% ^c	SD	Р
998 Demographics ^d					
Enrollment	956	1149	1024	286	0.356
% Free/reduced lunch	57.28	47.11	50.41	17.20	0.468
% Mobility	39.59	37.93	36.25	10.12	0.789
% Limited English	7.63	8.13	6.51	5.73	0.814
993 Outcome Indicators ^d					
Reading % above median	45.20	44.33	44.38	7.57	0.980
Writing % above 3	59.80	60.17	60.38	7.09	0.991
Math % above median	49.60	51.83	50.50	10.39	0.944
Promotion %	68.60	65.45	65.22	16.13	0.934
Suspension %	20.92	19.03	21.94	5.77	0.671
Absenteeism	10.38	11.25	10.86	3.33	0.920

has larger effects for those schools most in need, but still does not close the gap between schools with more versus fewer students receiving free/reduced lunch.

In the all-schools analysis, effects of PA on violence, suspensions, and absenteeism were marginally significant, none of which remained significant after including significant covariates (percent African American). Significant results were found in the matched-controls analyses for violence and suspensions, but not for absenteeism. The number of violence incidents per 100 students was 38% less in PA schools than in control schools in the all-schools analysis and 68% less in the matched-controls analysis. In the multivariate GLM for behavior, the interaction between PA or not and matched pairs was significant for violence, indicating that the program effect was stronger for higher numbered pairs, that is, in schools with higher proportions of African American students. Figure 2 shows the effect - program effects were larger where they were most needed, 33% reduction in schools with higher percentages of African American students compared with a

20% reduction in schools with lower percentages of African American students.

The percentage of students receiving out-of-school suspensions was 29.6% and 33.5% less in PA schools compared to non-PA schools in the all-schools and matchedschools analyses, respectively. The percentage of students reported being absent for 21 or more days was 10.5% and 12.7% less in PA schools compared to non-PA schools in the all-schools and matchedschools analyses respectively. In neither case was the interaction of PA or not and matched set number significant, indicating that the program was equally effective in higher versus lower risk schools.

Middle School Results

For each of the 33 middle schools in the district we calculated the proportion of feeder elementary schools actively implementing PA in 1997-98 and for at least 4 years prior (the percent PA score). The percent PA scores range from 0% to 100% with some skewness toward the high end (Table 4). We compare by tertiles, low-PA middle schools with less than 60% of their students being PA graduates, medium-PA

Table 5Effects of Elementary PA on Middle School StudentAchievement (Multivariate GLM) and Behavior (Univariate GLMs)by 3 Levels of % PA Graduates^a

	<u>% of</u> <60%	Students P 60-79%	A Graduate 80-100%	es SD	Р	Sig Co- variates	Sig Inter- actions	Adj R2
Achievement: % a	above aver	age grade 8	NRT					
Reading	43.71	48.40	50.89	12.24	0.014	(.001) ^b	(.012) ^b	0.918
%	change	11	16			(.000)	(.018) ^a	
Math	48.14	53.60	58.00	13.93	0.028	(.028) ^b (.000) ^d	(.042) ^b (.058) ^d	0.826
%	change	11	20				· · /	
Behavior: Inciden	ts per 10	0 students						
Drug Use ^e	4.09	2.58	1.20	1.65	0.001	(.01) ^b		0.522
%	change	37	71					
Violence	39.74	25.44	11.94	16.53	0.047	(.002) ^b (.018) ^c	(.05)°	0.665
%	change	36	70					
Dis ^f	322.27	220.27	101.40	120.77	0.047	(.002) ^b (.003) ^c	(.05)°	0.767
%	change	32	69			· /		
Property Crime ^g	5.52	3.83	2.66	2.12	0.000	.000 ^b .000 ^c	(.000) ^c .001 ^d	0.874
%	change	31	52			.001		
D CAL	50.40	10.10	10.04	21.04	0.000	(000)h		0.750
Days of Absenteeis	m 72.43 change	49.49 32	18.36 75	31.84	0.000	(.000)*		0.750

Note.

a Means and percent change shown, as well as pooled standard deviation, P value, significant covariates (with P Value), significant interactions (with P Value) and adjusted R square for the model

- **b** School size
- c Mobility
- d Lunch
- e Tobacco, alcohol and illicit substances. Results for each subcategory parallel those presented for sum.
- f Sum of disrespectful, disobedient, and disorderly behaviors.
- g Sum of larceny, petty theft, and vandalism.

middle schools with 60-79% PA graduates, and high-PA middle schools with 80-100% PA graduates.

There was no significant relationship between percent PA graduates and available school characteristics: school size (608-1607), percent free/reduced lunch (10.3-75.9), percent mobility (18.3-60.7), percent disabled (60.-21.1), percent limited-English (1.6-26.0), percent gifted (018.1), percent teachers with master's degree or higher (19.6-45.8), teachers' average years of experience (7.9-16.5), regular per-pupil expenditures (\$2898 to \$6284). Data on ethnic distribution were not available, but were estimated from feeder patterns (African American 2-62%, and Hispanic 7-45%). Furthermore, there were no significant differences on pre-PA (1993) indicators of achievement and be-

havior (Table 4).

Table 5 shows a clear dose-response relationship for all outcomes, with middle schools with more PA graduates scoring better than schools with fewer PA graduates. For reading, medium-PA middle schools scored 10.8% better and high-PA schools scored 16.5% better than low-PA schools. For math, medium-PA schools scored 11.4% better and high-PA schools scored 20.6% better than low-PA schools (Figure 3).

Students in medium-PA middle schools had 31-37% less, and students in high-PA schools had 52-75% less problem behaviors than did students in low-PA schools. There were significant interactions with percent mobility for violence, dissing behaviors, and property crimes. For example, as shown in Figure 4, the use of the PA program in elementary schools has larger effects in higher risk middle schools, essentially eliminating the otherwise clear correlation between the predictor covariate and the behavior.

High School Results

For each of 18 high schools in the district we calculated the proportion of feeder elementary schools actively implementing the PA program in 1997-98 and for at least 8 years prior. The percent PA scores range from 0% to 50%; 6 low-PA



high schools had 0-15% PA graduates, 5 medium-PA schools had 16-26% PA gradu-



Table 6

Significant Effects of Elementary PA on High School Student Achievement (univariate GLM), Employment and Continuing Education (Multivariate GLM), and Behavior (Univariate GLMs) by 3 Levels of % PA Graduates^a

	% of St	udents PA	Graduates	() D	D	a: a	Sta Inter	A.J: D2
<	60%	60-79%	80-100%	SD	P	variates	actions	Adj R2
Achievement: % abo	ve avera	ge grade 8	NRT					
% >3 Florida Writes	81.2	85.3	90.1	5.29	0.021		(.057) ^b	0.719
% ch	nange	05	11				× /	
% pass HSCT comm	73.7	78.0	81.0	5.98	0.019		(.037) ^b	0.596
% ch	nange	06	10					
% pass HSCT math	74.8	78.0	85.7	6.96	0.318			0.330
% ch	ange	04	15	6 0 0 7		(00.01		
Mean SAT score	951.0	980.8	1046.1	62.85	0.023	(.004) ^a	(.087)	0.767
% ch	ange	03	10	1 4 4	0 6 0 0			0 1 5 1
Mean AC1 composite	20.22	20.55	21.96	1.44	0.680			0.151
70 CI	lange	02	09					
Employment and Co	ontinuin	o Educatio	n					
% Employed (FT or P	PT)63.95	72.88	75.73	7.15	0.183			0.419
% ch	ange	14	18					
% Continuing Education	on38.75	50.75	53.45	9.98	0.001	(.003) ^b	(.003) ^b	0.870
% ch	nange	31	38			· · · ·	× /	
% drop out ^c	6.15	5.49	3.86	1.54	0.001	(.009) ^d		0.623
% ch	nange	11	37					
DI I I	100	G4 1 4 4						
Behavior: Incidents	per 100	Studentse	2.20	1 (0	0.022			0.000
Substance use	4.31	3.14	2.20	1.69	0.032			0.289
Violence 70 CI	1 28	2 95	2 16	1 50	0.000	$(000)^{d}$		0.704
% ch	4.20	2.95	2.10	1.59	0.000	(.000)		0.704
Sexual	0.19	0 14	0.07	0.09	0.007	$(023)^{d}$		0 476
% ch	ange	26	63	0.07	01007	(1020)		01170
Dis	43.76	35.29	31.48	12.39	0.068	$(.073)^{d}$		0.241
% ch	ange	19	28			()		
Falsify	1.87	0.93	0.80	0.76	0.003	(.033) ^d		0.522
% ch	nange	50	57					
Behavior: Percent o	f Studer	nts ^f						
% absent 21+ days	30.53	28.13	26.96	4.23	0.008	(.000) ^d		0.603
% ch	nange	08	12			· · · ·		
% in school	-							
suspensions	19.71	15.24	13.86	6.28	0.084	(.075) ^d		0.219
% ch	nange	23	30					
% out school								
suspensions 2	22.18	18.49	16.66	4.22	0.005	$(.015)^{d}$		0.502
% ch	nange	17	25					

Note.

a Means and percent change shown, as well as pooled standard deviation, P value, significant covariates (with P Value), significant interactions (with P Value) and adjusted R square for the model.

b School size

c Results from multivariate GLM with absenteeism and suspensions. All other achievement, employment and continuing education results from one multivariate GLM.

d Mobility

e All results from one multivariate GLM. Substance use = tobacco, alcohol, and illicit substances; Violence = threat, fight, weapon carrying, and battery; Sexual = sex-related harassment, battery and offences; Dis... = disrespect, disobedience, disruptive, and inappropriate dress; and Falsify = falsifying records.

f Absenteeism, suspension and drop out results are from one multivariate GLM.



ates, and 7 high-PA schools had 27-50% PA graduates. No high school had more than 50% of their students coming from elementary schools with PA. The proportions of high school students who were in PA elementary schools were substantially lower than the proportions observed for middle schools because the elementary schools had to have been doing PA for 8 years or more.

There were no significant relationships between the proportion of PA students and available school characteristics: school size (1121 to 3178 students), percent mobility (18.2-52.1), percent disabled (6.2-12.6), percent limited-English (1.1-16.8), percent teachers with master's degree or higher (31.8-52.7), teachers' average years of experience (9.1-16.5), or school expenditures per students (\$3296 to \$6064). Data on ethnic distribution or poverty were not available.

Significant effects occurred for a wide

range of indicators of achievement and behavior (Table 6). No significant effects occurred for behaviors related to property crime, school rules, bussing, and parking. As with the middle school results, there was a clear dose-response relationship for all significant outcomes.

Medium-PA high schools scored 2-6% better, and high-PA schools scored 9-15% better than low-PA schools on 5 different standardized achievement tests. For 3 outcomes, there was a significant interaction with school size (eg Figure 5), indicating that the endurance of PA program effects on student achievement is better in smaller schools.

Compared with low-PA high schools, the dropout rate is 11% lower from medium-PA high schools, and 37% lower from high-PA high schools. A similar doseresponse relationship is observed for the percentage of high school graduates who continue their education (31% and 38%



improvements respectively). There is a marginal effect of a similar nature for the percentage of high school graduates employed (14% and 18% improvements respectively).

Students in medium-PA high schools were 19-50% less, and students in high-PA schools were 28-63% less likely to engage in problem behaviors; 8% and 12%, less likely to be truant; and 17-23%, and 25-30% less likely to be suspended. There were no significant interactions with covariates, suggesting that effects were equal for high-risk and low-risk schools (eg, Figure 6).

DISCUSSION

Using archival school-level data, we have (a) replicated results of an earlier matched-control study on the effects of the *Positive Action* program on elementary school achievement and behavior;⁶ (b) found that adoption of other programs in addition to Positive Action led to no significant improvements; (c) found that the effects endured through middle and high

school for a broad array of indicators of both achievement and behavior; (d) found a clear dose-response relationship for most outcomes, such that schools with more PA graduates reported better student behavior, school involvement, and achievement; and (e) found that behavioral effects were as large or larger in higher risk as lower risk schools. These findings provide strong support for (a) the strength of the *Positive Action* program and (b) the idea that a comprehensive program can have broad and long-lasting effects.

This is also the first published evaluation of PA that had pretest data available to establish the equivalence of the matched controls. Non-random assignment to receive PA means that schools that elected to adopt/continue the program may have been different from control schools. By matching on school characteristics normally related to poor academic achievement and problem behavior, we hoped to control for school differences in behavior and achievement prior to the introduction of PA. The availability of pre-PA achievement and behavioral data (1993), albeit not with the same measures as used in 1998, helped us to establish the statistical comparability of the matched controls. This is a major improvement over the previously published matched control studies.⁶

The above limitation of the elementary school study could have carried over into secondary schools. If so, one would expect that schools with different proportions of PA graduates would differ. We did not find such differences, indicating that the mix of elementary schools feeding students into the secondary schools was not correlated with whether one or more of them had PA. Thus, we can be fairly certain of the pretest comparability of the student bodies in middle and high schools with different proportions of PA graduates.

When students from elementary schools with PA enter a middle or high school with students from an elementary school without PA, we would expect that the more PA graduates there are, the more likely it is that the average behavior of students will be better compared to students in a school with fewer PA graduates. Indeed, we found the hypothesized dose-response relationship. This pattern was very robust, replicating across all measures of achievement and behavior. The enduring effects of PA were especially strong for serious behaviors, high school dropout rates, and the long-term outcome of continuing education after high school. Few other elementary or middle school programs have reported effects enduring through high school.

We found that PA had its multiple effects in all kinds of schools, with equally strong behavioral effects in higher risk schools. Of particular interest is that achievement results do not seem to depend on any particular type of academic program being used with PA.

program being used with PA. Our use of school-level archival data may be seen as a limitation or as a strength. Being limited to school-level data did not allow us to investigate program effects on individual students. However, school-level data did allow us to demonstrate that the normative climate was changed sufficiently among a group of elementary school students and their families to carry over into other social environments (their secondary schools) and the rest of their lives. To our knowledge, no other program has reported such results.

The effects of PA support the notion that a comprehensive program can have effects in multiple domains. Only a handful of other programs have also reported effects in multiple domains.³⁹⁻⁴⁵ Many socalled comprehensive character education, social skills development and socialemotional programs have not reported such comprehensive effects. This is because their comprehensiveness is rather limited; eg, social skills training might be expected to improve multiple behaviors, but not all, and not necessarily academic performance.

Most programs are also of limited intensity, duration, and coherence. PA has 4 lessons per week (plus reading of messages from the "ICU Doing Something Good" box on Fridays) for every grade in an elementary school. The program is provided to every grade at the same time. The content of every grade level is parallel but unique, so that as students advance from lower to higher grades they can continue to enhance their PA learning. The curriculum for every grade builds upon what was learned in the previous grade. At the same time, students can start PA at any grade level and still learn the material.

PA offers coherent components for schoolwide climate change, family involvement, and community involvement. Few programs integrate schoolwide, family, and community components as coherently as Positive Action. The integration is not just the sum of the classroom activities, but other carefully designed activities are provided to school principals, parents, and community members. These other activities use the same language and follow the same sequence as the classroom curricula, but they provide for an added layer of learning for students, teachers/staff, parents, and community representatives.

PA recognizes the interrelatedness of student character, behavior, and academic achievement. The program impacts school and classroom management, motivation, learning climate, and the skills and knowledge of the core content areas. PA teaches knowledge of, and provides opportunities to practice, skills in these various content areas. The program also teaches thinking skills — reasoning, creativity, problem solving, decision making, higher-order thinking — as positive actions in the intellectual area. Additionally, PA teaches intrinsic motivation and self-responsibility, thus empowering students to take more initiative for their own learning.

As can be seen, PA is comprehensive in many ways — but another factor may explain the "magic" of PA. The entire focus is positive. Most prevention programs, with a few exceptions, focus on the negative behaviors that they are trying to prevent. Others focus on general health or general social competence development. PA focuses on positive actions behaviors, thoughts, and feelings - and values. Recent research literature suggests that prevention needs to emphasize youth asset development, resilience, and building on strengths rather than weaknesses or risk factors. PA's approach clearly achieves this. The PA approach brings a comprehensive approach to developing students, school personnel, families, and others through an integrated model that appears to accomplish genuine school reform with one program.

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