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AUTHOR Gottfredson, Denise C.
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ABSTRACT

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IMPLEMENTING A THEORY IN A LARGE-SCALE EDUCATIONAL INTERVENTION

Denise C. Gottfredson

The Johns Hopkins University

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Center for Social Organization of Schools
The Johns Hopkins University
3505 North Charles Street
Baltimore, MD 21218

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Introductory Statement

The Center for Social Organization of Schools (CSOS) has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through three research programs to achieve its objectives:

The School Organization Program investigates how school and classroom organization affects student learning and other immediate outcomes of schooling. Current studies focus on parental involvement, microcomputers in schools, use of time in schools, cooperative learning, and other organizational strategies that alter the task, reward, authority and peer group structures in schools and classrooms.

The Education and Work Program examines the relationship between schooling and students' later-life occupational and educational successes. Current projects include studies of the competencies required in the workplace, the sources of training and experience that lead to employment, college students' major field choices, and employment of urban minority youth.

The Schools and Delinquency Program studies the problems of crime, violence, vandalism, and disorder in schools and the role that schools play in delinquency. Ongoing projects address the development of a theory of delinquent behavior, school effects on delinquency, and the evaluation of delinquency prevention programs in and out of schools.

CSOS also supports a Fellowships in Education Research program that provides opportunities for talented researchers to conduct and publish significant research in conjunotion with the three research programs.

This report, prepared by the Schools and Delinquency Program, examines the effectiveness of using theory to guide a large-scale educational intervention designed to reduce delinquency.

Abstract

Theory is a useful guide for program design and implementation. This paper uses a large-scale school-based delinquency prevention project to illustrate the use of theory in program design and the need for line staff to have a clear understanding of the program's theoretical underpinnings. Evaluation results for the program show that the program was effective for reducing the level of delinquent behavior and changing a number of theoretical precursors of delinquent behavior at the school level. The program, however, failed to bring about the desired changes in behavior and attitudes of individuals targeted for special services. The differential effectiveness of the program components is attributed in part to differences in the extent to which implementation was guided by theory.

Acknowledgments

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Implementing a Theory in a Large-Scale Educational Intervention

A clear idea about the nature and causes of the problem is an essential guide to program development. Organizational development efforts that explicitly consider the causes of the problem to be addressed will be more effective than those that develop without benefit of such a theoretical framework. A report by the Panel on Research on Rehabilitative Techniques (Martin, Sechrest, & Redner, 1981) points out that in the absence of an adequate conceptual framework, interventions often are unrelated to the causes of the problem, ignore suitable target populations, and fail to consider questions of optimal timing and strength of the intervention.

Theory is also essential for the organization and communication of ideas. In research and in practice, we wish to test ideas about the causes of social problems as well as specific strategies designed to reduce the level of the problem. A clear statement of the theoretical rationale behind a program increases the probability that something useful will be learned from the trial, and that this useful knowledge will be communicated to others.

This paper uses a large-scale school-based delinquency prevention project to illustrate the need for line staff to have a clear understanding of the program's theoretical underpinnings. Programs <u>designed</u> with the benefit of explicit theory are not always <u>implemented</u> according to the same theory.

The project on which this paper is based operated in seven secondary schools in Charleston, South Carolina. It is a school-based delinquency prevention program designed and operated by the central administration of the city's school system. The project participated in formative evaluation activities structured by the Program Development Evaluation model (Gottfredson, G., in press; Gottfredson, Rickert, Gottfredson, & Advani, 1983). This framework for program development emphasizes the importance of explicit theory in organizational development activities.

The Theory

Initial Theory

No reference to academic theories of delinquency was made in the initial grant proposal for the project. The main theme of the proposal was that school disorder stems from the school system's failure to take a proactive approach to discipline and to tailor curriculum materials and instructional techniques to the needs of students. The project proposed to revise discipline procedures and policies using a preventive approach, to clarify the curriculum objectives and focus them more on students' diagnosed needs, and to provide opportunities for students, teachers, administrators, parents and other community members to engage in school improvement efforts. In addition, the project proposed to provide intensive tutoring and counseling to 100 "target students" in each school identified as being most in need of project services. Although the proposal was clear about the goals of the project and about the general approach that would guide program activities, it was, by Program Development Evaluation standards (Gottfredson, Rickert, Gottfredson, & Advani, 1983), lacking in a clear statement of the intermedi-

ate behavioral and attitudinal changes that the project intended to bring about.

Initial meetings with the project managers revealed an eclectic, loosely connected theory and a set of thirty-two discrete planned program activities. The theory resembled a list that might be generated if one were to pull key variables from every major theory of delinquency and to add to it variables relating to local sources that contribute to the schools' problems. In all, thirty-seven causes of delinquency were named. The planned program activities showed high congruence with the theory, suggesting that intermediate causes of the problems the program was addressing had been considered in the design of the program. Only five of the thirty-seven causal variables mentioned during the theory-generation stage were not addressed directly by the initially-proposed program.

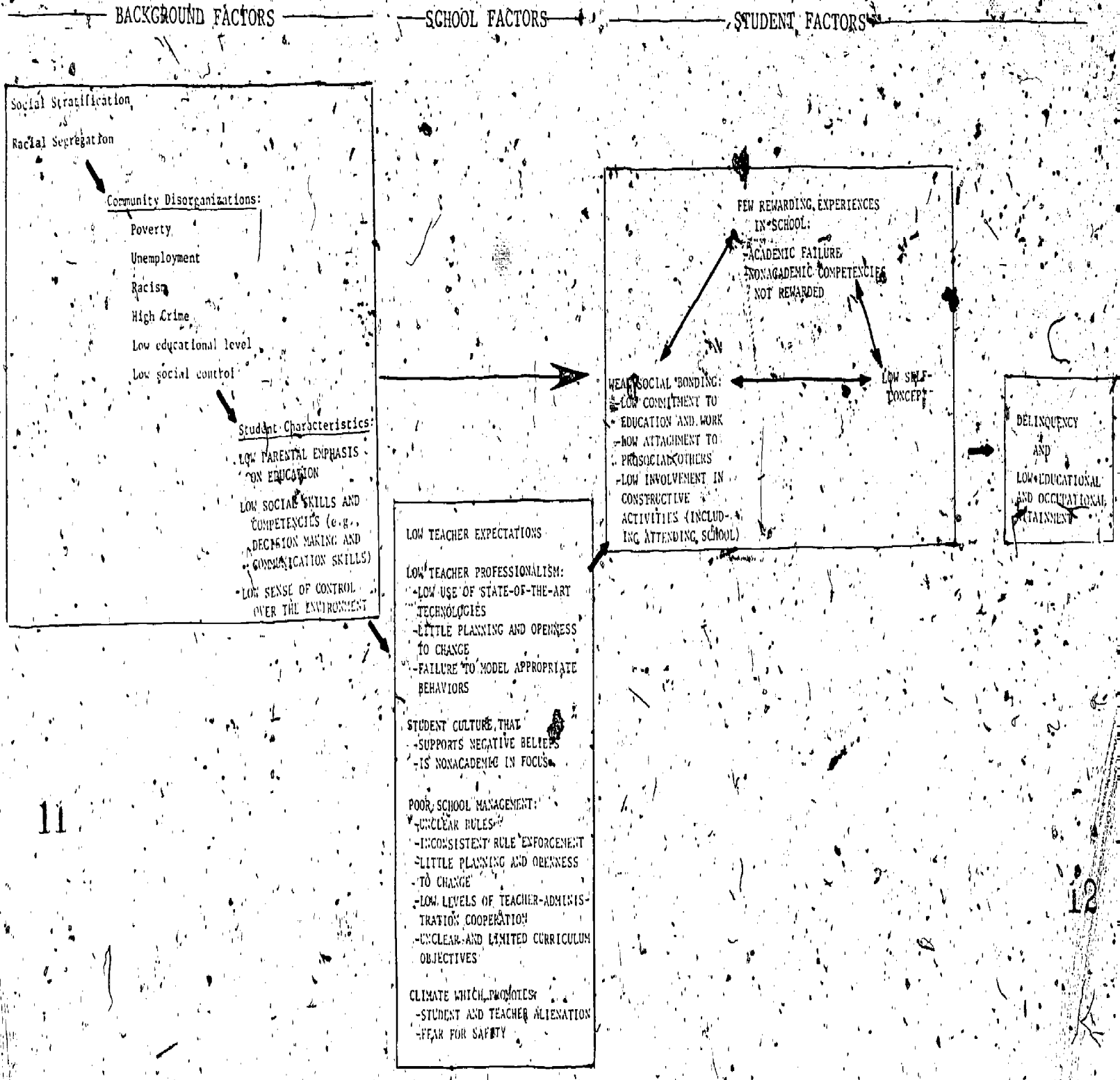
The Evolved Theory

Program development activities to remove redundancies and clarify causal links in the program's action theory produced the theory shown in Figure 1.

This version of the theory identifies a critical triangle of interrelated student behaviors and attitudes that must change in order to reduce delinquent behavior and increase educational and occupational attainment. It emphasizes five school factors that must be altered in order to bring about the desired changes in student behaviors and attitudes. The theory assumes that socioeconomic factors affect the family, school and student factors, but makes clear that the locus of intervention of the program is the school and that the program's effect on the community will result from long-term

Figure 1

Project PATHE Action Theory



Note--Variables in all capital
e directly targeted
intervention.

changes in the characteristics of the individuals inhabiting the community rather than through direct intervention.

Operationalizing the Theory

By the midpoint of the project, the program managers had reorganized the original thirty-two project activities into five major areas of intervention. This grouping of activities with similar objectives helped to focus program activities. The reconceptualization in turn helped the managers to reach consensus about the key focal points of the program and to elaborate the relatively parsimonious theory shown in Figure 1.

The major interventions and their primary objectives elaborated by the midpoint of the project were as follows:

The project's primary intervention was to establish and maintain an organizational structure which facilitated shared decision making among community agencies, students, teachers, school administrators and parents in the management planning for the school. The project provided training in assessing needs, researching problems, defining objectives and developing and implementing plans, assessing progress and redefining strategies. It established a team structure to implement school change, as well as a structure for review and revision of school policies.

Team Structure

Most school-wide innovations were accomplished through five teams. Two project staff persons in each school--the Curriculum Specialist and Student Concerns Specialist--shared responsibility for organizing the teams and

monitoring the activities of the teams. The composition and purpose of the five teams were:

Student Concerns Support Team. Five faculty members at each school worked with the Student Concerns Specialist to plan activities to improve school climate and the behavior of individual students.

Curriculum Support Team. Five faculty members representing the major academic areas worked with the Curriculum Specialist to plan and implement activities to improve academic performance.

Student Leadership Team. A group of at least ten students planned and implemented activities to improve the school. Development of leadership skills in the team members was a primary objective of this intervention.

Parent Leadership Team. Parent groups composed of at least ten parents were organized and trained to plan and implement activities to improve the school environment.

Business/Education Partnerships. The project worked to establish an active, productive partnership for each of its schools with a business in the community. The primary purpose of these partnerships was to provide management and public relations expertise to schools.

The primary objective of this team structure was improving school management. Although specific activities carried out by the teams often had other objectives, the organization of school and community persons into teams and the management training and experience provided through the teams were targeted directly at improving school management.

Policy Review and Revision Structure

Curriculum Review and Revision. Achievement test results were used to diagnose school-wide academic weaknesses. The Curriculum Specialist, in cooperation with the Curriculum Support Team, used the resulting information to plan and carry out remedial programs. These included ongoing Faculty Development through inservice training in new teaching techniques such as Student Team Learning (Slavin, in press). A curriculum resource room was established and its use monitored by the Curriculum Specialist. Resources included self-instructional activities, books and magazines for free reading, and other supplementary instructional materials. Both teachers and students were encouraged to use the resources provided. This intervention was directed at increasing teacher competencies and at improving school administration in curriculum development and delivery.

Discipline Review and Revision. The Student Concerns Specialist, with the Student Concerns Support Team, reviewed information about discipline problems in the school and planned and carried out activities designed to address those problems. Emphasis was placed on student involvement in the development of school and classroom rules, the establishment of a discipline referral procedure and the use of a standardized discipline referral form. The Discipline Review and Revision component included ongoing faculty development through inservice training. This intervention was aimed at improving teacher competencies in the area of classroom management and at improving school management in the discipline area.

For the innovations described above, what the teams implemented was not considered to be as important as the process the teams went through to plan

innovation and carry it forward. The curriculum and discipline policies that emerged from the Review and Revision component mattered less to the project implementers than the management practices the teams used in addressing the educational and discipline problems the schools faced.

In conjunction with the process innovations, the program used specific sets of school-wide academic innovations, climate innovations, career-oriented innovations, and services to target students.

School-Wide Academic Innovations

Study Skills. The Curriculum Specialists provided students with mini-courses on study skills (e.g., note-taking, listening skills, good study habits), and also served as resource persons for teachers in developing and implementing study skills units for their classes.

Reading Experience Program. A period of time was set aside in the school schedule for free reading for everyone in the building. Teachers, staff, and administrators as well as students were encouraged to participate and students were recognized for active participation.

Test Taking Program. The Curriculum Specialist distributed and monitored the use of Math and English practice tests for CTBS and state-wide tests. Teachers were encouraged to use the tests throughout the year on at least ten separate occasions. The specialist also organized and implemented on a school-wide basis activities such as providing test-taking tips to parents, teachers and students, and promoting positive attitudes toward test taking.

Field Trip Program. The project provided additional resources to the schools to assist with field trips in cultural, academic and career areas which supported the project's goals and objectives. Project staff members conducted field trips themselves or sought the assistance of other teachers in conducting them.

Student Team Learning. Student Team Learning is a set of classroom instructional techniques that uses student teams composed of students of different ability levels. Team members in STL classrooms study and drill together and prepare for quizzes or cross-team competitions. Teams earn rewards for improvement rather than for the absolute learning of their members. The techniques have received positive evaluations for enhancing learning, self-concept, liking of school and increasing cross-race and cross-sex friendships (Slavin, in press). Teachers in the project schools were offered training in STL techniques and were encouraged to implement the techniques in their classrooms.

School-Wide School Climate Innovations

This intervention involved specific programs aimed at enhancing the school climate. The subcomponents are:

The School Pride Campaign. This involved students and teachers in activities to improve the overall image of the school.

Expanded Extra-curricular Activities. The Student Concerns Specialist encouraged the growth of extracurricular activities on campus by assessing student needs, establishing needed activities, recruiting sponsors, and monitoring club progress.

Peer Counseling or RAP Sessions. Students were selected and trained to participate in a peer counseling program, or, alternatively, in adult-directed "rap sessions." The purpose was to establish a forum in which students could constructively discuss topics of concern and generate peer pressure to resolve problems in a socially acceptable way.

These activities were expected to alter the school climate by changing the normative belief structure in the school to a more prosocial one, by increasing cohesiveness among students and teachers, and by improving morale. The project sought to increase bonding to the social order through this set of activities.

Career-Oriented Innovations

Career Exploration Programs. The project, in cooperation with a local technical college, offered students at the high schools opportunities to participate in two programs designed to introduce them to technical careers such as engineering, computer science and industrial technology.

Job-seeking Skills Program. This intervention provided training in specific skills related to finding and keeping a job (e.g. interview etiquette) and offered opportunities for broadened career awareness. This intervention was aimed at increasing the educational and occupational attainment of youths by increasing their job-readiness, and at increasing students' commitments to conventional goals.

Services to Target Students

A major set of activities provided affective and academic services to students in need of intensive services. This program component made a special effort to increase the involvement and success experiences of students who may have already given up on their education. Students who were eligible for the direct services (about 10% of the students in the school were selected) were identified and diagnosed. Their behavioral treatment objectives were defined, appropriate academic and counseling services prescribed, and progress toward objectives monitored and frequently reassessed. Approximately half of the specialists' time was devoted to providing these direct services to target students.

The "triangle" of student-level objectives in the Student Factors box in Figure 1 was the target of the direct service component. Counseling and academic services were intended to increase rewarding experiences in school, increase self-concept, and strengthen students' bonds to the social order.

Implementation

Monitoring the strength and fidelity of implementation in such a broad program was a challenge. The program managers developed monitoring systems over the duration of the project to capture information on the intensity and quality of program services. The monitoring system used data from two main sources:

(1) "Program Development Worksheets" (PDW's) contained detailed management plans for all program activities. Program managers specified implementation standards for each program component and used the PDW's to monitor

the extent to which they met, exceeded or fell short of their standards. These worksheets were used to record monthly quality control data from meeting minutes, agendas, logs, and student folders and from regular interviews with school personnel. The monitoring worksheets contain a wealth of information about the quality of project implementation. The documents have not yet been coded and summarized for the 1982-83 school year, but for the 1981-82 school year they indicated that the program as a whole met approximately 75% of its program standards. The school-wide academic interventions were implemented most faithfully, and the team-structure and career interventions were well-implemented only in the high schools. School-wide affective interventions such as rap sessions and extracurricular activities were not as well implemented (Gottfredson, 1983).

(2) Records of specialist contacts with students provided a more readily-useable source of implementation data. Data on the nature of each contact were systematically captured using sign-in sheets and daily contact logs. These data were collected monthly. Table 1 summarizes contacts for the 1982-83 school year for the six schools that remained in the program for the 1982-83 school year. One school was dropped due to budget cutbacks.

Implementation standards called for an average of three contacts per month with each target student, or about twenty-seven per year. Table 1 shows that only one school met the standard. However, the intensity of the direct service component nearly tripled over 1981-82 levels. During the 1981-82 year the average number of contacts per target student per school ranged from 3.81 to 13.67, with a total school average of 6.86--less than one contact per month for the average target student. For the 1982-83 year,

Table 1

PATHE Specialist Contacts During 1982-83

	% students in school contacted	Avg. no. contacts per student		
		entire school	target	control
Middle I (n=496)				
Total Affective	.37	1.92	10.95	.97
Total Academic	.14	1.09	9.42	.08
Total Career	.04	.08	.04	.06
Total Contacts	.39	3.09	20.40	1.11
Middle II (n=548)				
Total Affective	.21	1.11	6.02	.33
Total Academic	.22	3.02	26.81	.21
Total Career	.00	.00	.03	.00
Total Contacts	.31	4.14	32.86	.54
Middle III (n=489)				
Total Affective	.17	.82	6.44	.00
Total Academic	.12	1.35	12.10	.00
Total Career	.00	.00	.00	.00
Total Contacts	.20	2.17	18.54	.00
High I (n=1116)				
Total Affective	.08	.66	3.59	.45
Total Academic	.14	.48	3.93	.21
Total Career	.06	.08	.04	.03
Total Contacts	.22	1.22	7.56	.69
High II (n=899)				
Total Affective	.03	.96	4.39	.61
Total Academic	.29	1.69	12.12	.67
Total Career	.02	.04	.00	.00
Total Contacts	.32	2.69	16.52	1.28
High III (n=781)				
Total Affective	.52	3.36	7.83	2.47
Total Academic	.26	.76	3.55	.18
Total Career	.04	.08	.08	.02
Total Contacts	.62	4.20	11.46	2.67

Note. Affective contacts include contacts for Student Leadership Team activities, fieldtrips, extracurricular activities and youth conferences. Academic contacts include contacts for tutoring, study-skills sessions, test-taking skill sessions and sessions during which specialists monitored the progress of students and diagnosed educational and affective needs. Career contacts include contacts for the career orientation programs and job-seeking skills sessions.

the per school averages ranged from 7.56 to 32.86, with a total school average of 17.89--about two contacts per month per target student.

A program decision to intensify direct services coupled with budget cutbacks for the 1982-83 school year required a reduction of effort in school-wide services. This shift is evident in the Table 1 figures on percent of students in the school contacted. During the 1981-82 school year, between 38 and 77 percent of the students in the project schools were involved in some documented project activity. The average percent contacted was 60 percent. Table 1 shows the range for the 1982-83 school year to be 20 to 62 percent, with an average of 34 percent. This reduction in school-wide contacts primarily affected counseling services to students referred by teachers for disciplinary incidents. Most other school-wide services remained fairly stable.

To summarize, the implementation data suggest that the direct service component of the project was well implemented during the 1982-83 school year, although not as strongly as intended. The intensity of school-wide services is about as expected except that affective services in high schools I and IL are relatively low. Future summarization of the Program Development Worksheet monitoring information will provide more precise data on the quality of program services.

Effects of the Program

This school improvement project was part of a national evaluation of seventeen projects that sought to reduce delinquency through alternative education (Gottfredson, G.D., 1982; Gottfredson, Gottfredson & Cook, 1983a,

1983b). The results described below are derived from these national evaluation activities.

Data

Surveys of students and teachers in all the project schools and in two comparison schools were conducted in the Spring of 1981, a year later in the Spring of 1982, and once again in the Spring of 1983. All full-time teachers in the schools were sampled, and a random sample of approximately 200 students was selected each year from each school. All target and control students were sampled with a probability of 1.0 each year, as were students who were part of a prior year's random sample (this was done to enable longitudinal studies.) Students identifiable in advance as educable mentally retarded youths were excluded from the sample. School averages presented in Tables 2 and 3 are based on school averages obtained by weighting each person's responses by the inverse of the probability with which the person was sampled.

Evaluation Design

A true experiment was implemented to evaluate the effectiveness of services to target students. The procedures for the initial randomization which occurred before the beginning of the 1981-82 school year are described in detail elsewhere (D. Gottfredson, 1983). Post-randomization checks on pre-treatment discipline and academic measures indicated that equivalence was achieved. All 1981-82 treatment and control students remaining in the project schools for the 1982-83 year remained in the experiment. No significant treatment-control differences in attrition from the study were

detected. Treatment and control slots left vacant by attrition were filled by randomizing from a pool of students in each school who scored low on standardized achievement tests, received poor grades or had presented disciplinary problems during the previous year. In all, 124 students were added to the treatment and control groups in this way. The percentage of new treatment and control students ranged from 0 percent in two middle schools to 33 percent in a high school. Post-randomization checks using pre-treatment standardized achievement test scores and survey measures of gender, race, age, and parental education level imply that the target and control groups for the 1982-83 school year remained equivalent.

The effects of school-level interventions are assessed by examination of year-to-year differences in school averages on measures of the project's goals and objectives. Two non-project schools--one high and one middle--were selected for comparison with the project schools. All nine schools were surveyed in Spring, 1981 and Spring, 1982.

The school district underwent a major school reorganization in Fall, 1982 which threw a monkey-wrench into the final year of our school-level evaluation. The high school comparison school was closed, and students from the comparison school and two of the project high schools were reassigned to one of the remaining two schools on the basis of their grade level. We were unable to disentangle the effects of the program during the 1982-83 school year from the effects of the reorganization for these three high schools. For this reason, results for only the 1981-82 school year will be presented for the high schools.

Budget cutbacks in the third year required that the program be discontinued in one of the middle schools. We kept this dropped school ("Middle IV") in the survey sample to enable an assessment of the effects of pulling the program out of the school--a poor man's ABA design (Cook & Campbell, 1979). Results for this school are shown separately for the two years.

Measures

The measures examined have been described elsewhere (Gottfredson, Ogawa, Rickert, & Gottfredson, 1982; Gottfredson et al., 1983). The following provides an overview of the measures, all of which are based on self-administered questionnaires. The measures based on student survey responses include:

Alienation. This scale measures the extent to which the students feel estranged from the social order.

Attachment to school. This scale, based on reports that the student likes school, measures an element of Hirschi's (1969) social bond.

Belief in conventional rules. This scale is based on student reports that taking advantage of others, breaking rules, etc., are OK. It also measures an element of the social bond according to Hirschi (1969).

Involvement. This is a checklist measure of participation in a variety of school activities.

Self-concept. This scale measures students' self-esteem combined with their conception of themselves as prosocial, law-abiding citizens.

School non-attendance. This is a two-item index of class cutting and school cutting.

Self-reported delinquency. This scale is based on 19 items asking whether the respondent has committed various illegal behaviors in the past year.

Educational expectation. This is the response to a single questionnaire item asking how far the student expects to go in school.

School rewards. This scale is based on students' reports that they have been rewarded in various ways in school for their recent school behavior.

School punishments. This scale is based on students' reports that they have been punished in various ways in school for their recent school behavior.

Rule Fairness. This three-item scale is based on student reports that the school rules are fair, that the punishment for breaking rules is the same for everybody, and that the principal is fair.

Rule Clarity. This aggregate-level scale is composed of questions asking whether everyone knows what the rules are, whether teachers let the students know what is expected, and whether the principal is firm.

Victimization. This is a five-item scale based on student reports of personal victimization.

The next five measures are based on teacher survey responses:

Teacher Morale. This 11-item scale measures teacher morale with items such as, "Our problems in this school are so big that it is unrealistic to expect teachers to make much of a dent in them."

Low Expectations. This two-item scale asks teachers to judge what percentage of their students are of low ability and have "behavior problems."

Planning & Action. Questions like "How often do you work on a planning committee with other teachers" comprise this nine-item scale which measures the extent to which the school as an organization engages in systematic planning and is open to change.

Safety. This 10-item scale measures teachers' perceptions of the safety of their schools.

Victimization. This eight-item scale, based on teacher reports of personal victimization, asks teachers to report on victimization experiences ranging from obscene remarks or gestures to physical attack.

Results

School Level

Tables 2 through 4 show evaluation results for the 1981-83 period of program services. The tables show only results for measures of variables that are central to the action theory (see Chen & Rossi, 1983). Other evaluation results are summarized for the 1981-82 year in Gottfredson (1983; 1984). Tables 2 and 3 show t-statistics for the difference in school means for the

Table 2

t-statistics for Year-to-Year Differences on School Averages for Individual Level Outcomes

School	Individual Level Outcome Survey Measure							
	Total Delinquency	School Rewards	School Punishments	School Nonattendance	Positive Self Concept	School Attachment	Educ. Expectations	Involvement
Middle I	--	1.55	-.85	.81	1.42	1.48	-1.47	-1.17
Middle II	--	-2.14*	-.49	1.73	1.08	2.35*	-.18	-.09
Middle III	--	1.47	.51	-.69	2.29*	3.47**	2.41*	-.89
Middle IV (interrupted)								
81-82	--	.60	.98	.67	1.04	1.17	.11	-.10
82-83	-.76	-1.81	3.66**	-1.24	-.21	-.80	-.77	-.86
Middle V (comparison)	--	-1.85	1.26	.77	1.21	-2.01*	1.49	-.65
High I	-1.92	-.84	-2.40*	-.05	.66	.83	-.69	-1.07
High II	-1.08	.16	-1.40	-.94	2.97**	-1.56	1.88	.73
High III	-2.05*	.25	-.61	-1.18	.70	-.63	.38	1.56
High IV (comparison)	.09	-.75	.45	-1.77	2.08*	-1.23	-1.52	-.56

Note. The desired direction of change is positive except for School Punishments, Total Delinquency and School Nonattendance. All measures are taken from the SAES student surveys. Middle Schools I through III and High Schools I through III received project services from September, 1980 through May, 1983. Middle School IV received project services from September, 1980 through May, 1982. Middle School V and High School IV never received project services. Delinquency was not measured in 1981 in the Middle Schools. Middle school t-statistics reflect differences from Spring, 1981, to Spring, 1983. High school t-statistics reflect differences from Spring, 1981 to Spring, 1982.

* $p<.05$
** $p<.01$

Table 3

t-statistics for Year-to-Year Differences on School Averages for School Level Outcomes

School	School Level Outcome Survey Measure								
	Teacher Reports of					Student Reports of			
	Teacher Morale	Low Expectations	Planning & Action	Safety	Smooth Administration	Belief in Rules	Alienation	Rule Fairness	Rule Clarity
Middle I	.80	-.49	-.73	1.96*	-.51	.52	-1.70	.68	.12
Middle II	-.79	1.22	1.37	1.62	-.19	2.11*	-.74	1.62	1.25
Middle III	2.37*	-.64	1.70	1.03	1.88	2.98**	-3.08**	.74	1.03
Middle IV (interrupted)									
81-82	1.67	.04	.87	2.17*	-1.68	1.39	2.97**	.37	.23
82-83	.96	-.45	1.06	3.65**	2.88**	-1.32	.29	.55	1.23
Middle V (comparison)									
81-83	-1.79	-1.69	-2.56**	.27	-1.01	1.70	-.31	-1.13	-.12
High I	.52	.20	-.15	.11	1.25	.32	-1.91	.68	.59
High II	.85	-1.26	-.29	1.40	.02	1.21	-2.51*	-.57	.25
High III	2.12*	-1.46	.20	.29	.68	1.26	-.76	-.15	-.09
High IV (comparison)	-1.46	.33	-.61	1.82	-2.88**	.34	.98	-.52	-1.13

Note. The desired direction of change is positive except for Low Expectations and Alienation. All measures are taken from the SAES student and teacher surveys. Climate measures, i.e., scales composed of student and teacher reports of the school climate, were constructed using items that had been aggregated to the school level. The "t-statistic" for these scales (Clarity of Rules, Fairness of Rules, Safety, Teacher Morale, Planning and Action, and Smooth Administration) is the ratio of the difference between the mean for the later year and the baseline year to the standard error of measurement of the 1982 scores for all schools in the OJJDP initiative. Middle Schools I through III and High Schools I through III received project services from September, 1980 through May, 1983. Middle School IV received project services from September, 1980 through May, 1982. Middle School V and High School IV never received project services. Middle school t-statistics reflect differences from Spring, 1981, to Spring, 1983. High school t-statistics reflect differences from Spring, 1981 to Spring, 1982.

* $p<.05$
** $p<.01$

Table 4

Means and Standard Deviations for Treatment and Control Students on Spring, 1983 Survey Measures

ool d up	Total Delinquency			School Rewards			School Punishments			School Nonattendance			Positive Self Concept			School Attachment			Involvement			Educ. Expectations		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N
dle I																								
rget	.16	.20	40	.40	.36	42	.34	.30	40	.28	.34	49	.74	.18	37	.77	.21	42	.33	.21	40	2.49	1.67	47
ntrol	.12	.14	36	.37	.30	50	.33	.26	50	.17	.33	56	.75	.18	44	.80	.19	49	.27	.20	47	2.87	1.76	55
dle II																								
rget	.10	.11	38	.36	.33	42	.29	.26	42	.16	.34	49	.75	.17	31	.68	.27	41	.26	.24	45	2.61	1.80	49
ntrol	.08	.13	30	.26	.24	26	.36	.26	25	.24	.36	33	.70	.17	15	.69	.24	26	.20	.20	32	2.55	1.84	31
dle III																								
rget	.10	.15	40	.30	.33	40	.27	.27	40	.14	.30	48	.72	.18	35	.69	.27	39	.23	.17	44	2.42	1.78	47
ntrol	.10	.17	11	.21	.22	13	.17	.21	13	.11	.29	14	.71	.11	11	.68	.21	13	.22	.21	10	2.67	1.68	15
gh I																								
rget	.16	.18	50	.25	.28	60	.33	.29	60	.48	.42	63	.78	.17	53	.64	.24	63	.22	.21	59	1.94	1.46	62
ntrol	.11	.17	56	.22	.27	63	.26	.27	63	.45	.42	69	.76	.15	45	.69	.23	60	.19	.17	63	2.26	1.58	69
gh II																								
rget	.14	.15	69	.19	.27	67	.20	.24	69	.51*	.38	75	.81	.15	61	.74	.21	68	.17	.17	70	2.35	1.53	74
ntrol	.19	.16	53	.24	.27	53	.28	.27	53	.67	.40	57	.79	.18	47	.72	.24	50	.20	.16	55	2.36	1.48	59
gh III																								
arget	.11	.14	59	.24	.27	64	.20	.27	63	.34	.38	67	.77	.16	58	.70	.23	61	.25	.20	60	2.57	1.68	67
ontrol	.11	.14	61	.29	.30	70	.17	.26	71	.30	.36	74	.76	.16	62	.71	.22	69	.30	.24	68	2.15	1.57	74

te. The desired direction of change is positive except for School Punishments, Total Delinquency and School nattendance. All measures are taken from the Spring 1983 SAES student survey.

p<.05

1981 to 1982 period for high schools and the discontinued middle school, the 1982 to 1983 period for the discontinued middle school, and the 1981 to 1983 period for the middle schools that received continuous program services. Table 2 reports results for the student outcomes in the rightmost portion of the theory diagram (Figure 1), and Table 3 reports results for the factors theorized to produce those student outcomes.

We were prohibited from asking middle school students about their delinquency experiences during the first survey administration, so a comparison of 1981 to 1983 scores is not possible. In results reported elsewhere (Gottfredson, 1984) none of the middle schools showed significant changes in level of delinquency from 1982 to 1983, although the comparison school's increase in delinquency approached significance. Three of the project schools and the former project school showed nonsignificant decreases in delinquency and the other project schools showed no change.

The results for the measures of student factors implied by the program theory (Table 2) provide support for the program. The program schools, on the average, improved on 68.2% of the measures. The comparison schools improved on only 26.8%. Although most of the t-statistics do not reach conventional significance levels, all but one of the differences for the program schools that reach statistical significance are in the positive direction. For the comparison schools, one is in the positive and one in the negative direction. The former project school (Middle IV) shows reversals for five of the seven measures, with improvements evident while the project was operating and declines following the removal of the program.

The results for the intermediate outcomes of the program shown in Table 3 are more supportive of the program. The program schools improved, on the average, on 81.5% of the measures. The comparison schools improved on 33%. The significant results for the program schools are all in the positive direction and for the comparison schools they are both in the negative direction. The results for the former project middle school are difficult to interpret. Reversals similar to those on Table 2 are evident for two measures of the student composition of the school--Belief in Rules and Alienation--but for the teacher reports of school climate the school continued to or started to improve.

Direct Services

Table 4 shows treatment-control comparisons for student outcomes targeted by the direct service component of the program. In summary, the groups appear equivalent on most measures after two years of treatment. Analysis of variance using treatment and school as factors yielded no significant treatment effects or treatment x school interactions.

Evaluation results from the first year of program services showed significant positive treatment effects on school grades and standardized achievement test scores (D. Gottfredson, 1983). Future analyses on these outcomes may replicate the 1981-82 year finding.

Discussion

Our evidence supports the project theory at the school level, but not at the individual level of treatment. One likely explanation for this is that the theory was implemented only at the school level.

The theory diagrammed in Figure 1 evolved over the three years of project operation. The major change to the project theory resulting from program development efforts was the highlighting of the triangle of intermediate student factors, which did not occur until the Spring of the final year of program operations. The school factors had always been theorized as causal factors, and program activities aimed at altering those factors had always been a part of the program plan.

The specialists who implemented the program in the schools on a day-to-day basis may have been largely unaware of the theory underlying the program. They did not engage in program development activities aimed at clarifying the theory, and the program managers' interactions with the specialists were focused primarily on clarifying implementation standards, providing technical assistance, and monitoring program activities. Although the specialists were oriented to the project philosophy in August, 1980, the main idea conveyed during that orientation was the same theme that ran through the grant proposal: An integrated approach to the problem of discipline is necessary. Schools must attend to the affective as well as to the academic needs of students. The centrality of self-concept and social bonding to the theory were never made explicit to the specialists.

Interviews with the specialists during the final year of project operations supported this hypothesis. Specialists varied greatly in their understanding of the underlying principles of the project. For example, in response to the question, "How does the project affect delinquency?", we received responses that ranged from "It doesn't; we let the school administration handle the hard cases" to a full-blown explanation of how the pro-

gram is expected to decrease delinquency by increasing self-[illegible] and creating a "sense of belonging" in the school. Somewhere in-between were explanations citing the importance of intermediate student factors other than those emphasized in the project theory. All specialists understood the importance of increasing academic achievement for target students, but few placed equal emphasis on raising self-esteem or strengthening social bonds.

The one school whose specialists had a clear understanding of the underlying program theory (Middle III in the tables) experienced the most drastic improvements on the outcome measures. The school improved on five of the seven student outcome factors implied by the theory, and the improvements in Self-concept and two of the social bond measures (School Attachment and Commitment) reached significance. It improved on all nine of the school level intermediate outcomes implied by the theory, and the improvements in Teacher Morale, Belief in Rules and Alienation reached significance.

The low level of consensus about the underlying program theory was probably more detrimental to the direct service interventions than to the school-wide interventions. Project managers had more control over the the school-level activities and the school-level activities were more standardized than were the individual services. We have no way of knowing exactly what went on in individual counseling or tutoring sessions with the target students, but it is likely that specialists focused on student attitudes and behaviors other than those specified in the theory. In short, [illegible]ialists had considerable freedom to exercise professional judgement in their direct contacts with target students. The common focus on academics may explain the previously-observed treatment effect on school grades and achievement

test scores, and the low level of consensus about the affective student objectives may explain the absence of treatment effects in these areas.

Theory is a useful tool for use in selecting a program design, but it is also an essential guide for program operations. Program implementers need templates to guide daily interactions and decisionmaking. School improvement efforts--and any organizational development efforts--would benefit from an explicit statement of the theory underlying the effort and from knowledge that the actions of program managers and program implementers alike are guided by the theory. In the absence of a clear understanding of the theory underlying the program, implementers will rely on their own personal theories.

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