DOCUMENT RESUME

ED 212 680 TM 820 137

AUTHOR Juel, Connie; Roper/Schneider, Diane
TITLE A Process and Outcome Evaluation of an Affective In-Service Training Program for Junior High School Teachers: Second Year Results.
INSTITUTION Pacific Inst. for Research and Evaluation, Napa, Calif.
SPONS AGENCY National Inst. on Drug Abuse (DHHS/PHS), Rockville, Md.
PUB DATE Sep 81
NOTE 46p.; For related documents, see TM 820 136-138.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Classroom Techniques; *Decoding (Reading); *Drug Abuse; Formative Evaluation; *Inservice Teacher Education; Junior High Schools; Phonics; *Prevention; *Program Evaluation; *Secondary School Teachers; Student Attitudes; Student Teacher Relationship
IDENTIFIERS *Effective Classroom Management (Junior High)

ABSTRACT

Teachers were trained in either or both of two versions of Effective Classroom Management--Junior High (ECM). In the second year of the study, teachers were taught techniques in discipline, communication, and self-esteem enhancement. The goals of the in-service training were to make teachers more responsive to students' affective and cognitive needs. The short-term goals of implementation were to foster positive student attitudes, behaviors and norms regarding self, peers, and school. These changes were expected eventually to lead to reduced acceptance and use of psychoactive substances. The present report evaluates the second year of ECM. The research design employed a nonequivalent control group with a pretest at the beginning of the first year of the study and a posttest at the end of the second year. The treatment group consisted of 8th and 9th grade students and teachers from a junior high school. Most of the teachers in this school participated in at least one year of ECM training. The control group consisted of 8th and 9th grade students and their teachers in another junior high school in the same school district. The predicted positive effect on satisfaction with teaching was significant for all participants, but not all experimental teachers. ECM did not appear to affect student outcomes. (Author/GK)

A Process and Outcome Evaluation of an Affective In-Service Training Program for Junior High School Teachers: Second Year Results

Submitted to:

National Institute on Drug Abuse

Prevention Branch

September, 1981

The Napa Project
Pacific Institute for Research
and Evaluation
905 Jefferson Street
Napa, California 94558

Joel M. Moskowitz, Ph.D.
Janet Malvin, Ph.D.
Gary A. Schaeffer, Ph.D. Cand.
Eric Schaps, Ph.D.
John W. Condon, Ph.D.

Abstract

This study evaluated the cumulative effects on teachers and students of two years of Effective Classroom Management--Junior High (ECM). Teachers were trained in either or both of two versions of ECM. The components of both versions of ECM are similar to those in many affectively-oriented in-service courses. In the first year, teachers were taught techniques in problem-solving, communication, and self-esteem enhancement. In the second year, teachers were taught techniques in discipline, communication, and self-esteem enhancement. The goals of the course were to make teachers more responsive to students' affective and cognitive needs, thereby fostering positive attitudes, behaviors, and norms regarding self, peers, and school. The ultimate objective was to reduce students' acceptance and use of psychoactive substances.

The study employed a nonequivalent control group design with pretest and posttest. The experimental group was composed of 464 students enrolled in one junior high school, along with 38 of their teachers. The control group consisted of 264 students in another junior high, and their teachers. Several teacher outcomes were measured: satisfaction with teaching, faculty cohesiveness, and effectiveness at achieving ECM-related teaching objectives. Data were collected from students regarding a number of mediating variables (e.g., self-esteem, attitudes toward school, perceptions of peers' norms and behaviors) and drug-specific variables (e.g., current use, lifetime use, intentions to use in the future, attitudes toward use, perceived benefits and adverse consequences of use). Student achievement and attendance data were gathered from school district records.

Process evaluation data included a) teacher feedback on the individual training sessions, b) questionnaire surveys of teachers at the end of training and the end of the school year, and c) observations of classroom implementation. These data showed that the training was regarded very highly by the teachers, but that they did not regularly use most of the ECM skills in their classrooms. Overall, levels of implementation of skills were disappointing, though the teachers varied considerably in how often they used the skills.

Comparisons of experimental and control group teachers revealed no treatment effects on effectiveness at achieving ECM objectives or on faculty cohesiveness. However, a significant positive effect was found on satisfaction with teaching for the teachers who completed the in-service training, but not for all teachers in the experimental school.

The predicted pattern of student outcomes was not obtained. Although hypothesized effects were found for ninth grade males on perceived teaching

climate and locus of control, these effects did not form an interpretable pattern. Nor was any pattern of effects obtained for eighth grade males or females or ninth grade females.

The relationship between the students' posttest outcomes and the number of ECM-trained teachers to which the students had been exposed was examined within the experimental school. No relationship was found between student outcomes and the amount of exposure to ECM teachers. This finding provided further evidence that the few treatment effects that did obtain were probably spurious.

Thus, ECM failed to produce a consistent pattern of positive effects, and the failure is best attributed to weaknesses in the ECM in-service curriculum and the training procedures.

INTRODUCTION

Affective teacher training courses have been a major component of many primary prevention programs. State-wide prevention programs in Michigan (Michigan Department of Education, Note 1), Georgia (Georgia Department of Human Resources, Note 2), and Pennsylvania (Bandt, Hammond, Wisdo & Mitzel, Note 3) have emphasized such training. Affective teacher training programs have been shown to be effective at improving peer relationsnips, classroom discipline, attitudes toward school, and academic achievement (Baskin and Hess, 1980). Therefore, training "significant others" (e.g., parents, teachers) in affective skills may be an effective approach to prevention (Schaps, DiBartolo, Moskowitz, Palley & Churgin, 1981).

In the present study, teachers were trained in either or both of two versions of Effective Classroom Management--Junior High (ECM). The components of both versions of ECM are similar to those in many affectively-oriented in-service courses. In the first year of this study, teachers were taught techniques in communication, problem-solving and self-esteem enhancement. In the second year of the study, teachers were taught techniques in discipline, communication, and self-esteem enhancement. The goals of the in-service training were to make teachers more responsive to students' affective and cognitive needs. The short-term goals of implementation were to foster positive student attitudes, behaviors and norms regarding self, peers, and school. These changes were expected eventually to lead to reduced acceptance and use of psychoactive substances.

Participating teachers applied the in-service skills in their classrooms under the guidance of the trainers. The teachers were thus the critical links in the delivery of this intervention; the adequacy of the "treatment" depended upon teachers' use of the techniques. Consequently, teachers' reactions to the training and their use of the ECM skills were evaluated intensively.

The effects of the first year of ECM training have been evaluated previously (Schaps, Moskowitz, Condon, Malvin & Schaeffer, Note 4). Treatment effects on 7th-9th grade teachers or students generally were not found. The process evaluation revealed poor implementation of most skills, especially the problem solving skills. Therefore, in the second year of the ECM training, problem solving skills were eliminated, and discipline skills were added. (Detailed documentation of the curriculum is available [Adams, Slimmon & Schaps, Note 5]).

The present report evaluates the second year of ECM. The research design employed a nonequivalent control group (Cook and Campbell, 1979) with a pretest at the beginning of the first year of the study and a posttest at the end of the second year. The treatment group consisted of 8th and 9th grade students and teachers from a junior high school. (The students were in 7th and 8th grade in the first year of the study.) Most of the teachers in this school participated in at least one year of ECM training. The control group consisted of 8th and 9th grade students and their teachers in another junior high school in the same school district.

Various mediating and drug-specific outcome variables were measured in this study (see Methods section). We hypothesized that ECM would positively impact perceived classroom climate, attitudes toward school, social self-esteem,

and discipline behaviors, because the in-service skills bear most directly on these variables.

During the next year, the teachers in the treatment school will receive additional training in ECM skills, and final posttest data will be obtained for the 8th grade students.

METHOD

Assignment of Schools to Condition

Two junior high schools (grades 7-9) from a predominantly white, middle-class, suburban public school system in Northern California participated in this study. One school was assigned to the treatment condition and the other school to the control condition. All teachers in the treatment school were offered two years of ECM in-service training; the control school received no service delivery.

Subjects

All students and their teachers in the treatment school constituted the treatment group.[1] Of the 61 treatment school faculty members, 15 (25%) completed only the first year of ECM training, seven others (11%) completed only the second year of training, and 16 others (26%) completed both years of training.

At the beginning of the study there were 725 students in grades 7 and 8 in the treatment school and 460 in the control school.[2] A total of 248 students (34%) from the treatment school and 180 students (39%) from the control school were excluded from the study because two complete years of

[1]Special education students and teachers in both schools were not included in the study.

[2]An additional 142 students from the treatment school and 256 students from the control school were excluded from the present study because they participated in other studies.

data were not available for them. In addition, 13 treatment school students and 16 control school students were eliminated because they reported repeated use of a bogus drug.

The treatment group in the analyses of the second year data included 464 (64% of total enrollment) students, with 115 males and 104 females in grade 8 and 128 males and 117 females in grade 9. Analyses for the control group included 264 students (57% of enrollment), with 50 males and 54 females in grade 8 and 75 males and 85 females in grade 9. The ethnic composition of the analysis sample was 93% (N = 432) white in the experimental and 87% (N = 230) white in the control school. Of the total sample, 9% (N = 66) were minority students, with Mexican-Americans (N = 32) and Asian/Pacific Islanders (N = 17) comprising the largest subgroups.

In-Service Training Program

The second year of the ECM in-service program consisted of seven two-hour training sessions held weekly after school. There were also two "reunion" sessions in February and March, 1980.[3] The teachers were paid $200 for attending the sessions and trying to apply the ECM skills in their classrooms. They also were offered graduate-level credit from a local university for completing the training.

Both trainers were experienced in conducting in-service programs for teachers. They also had been classroom teachers and school administrators, and had taught many of the ECM skills in previous training programs.

[3]The first-year course consisted of ten two-hour sessions plus one "reunion" session.

The training sessions generally followed a standard format. First, a self-concept enhancement technique or activity was introduced. Then the skills taught in prior sessions were reviewed and the teachers' experiences using the skills during the previous week were discussed. After this, new skills were introduced and practiced.

Four communication skills were taught during the first two training sessions:

- I-Messages--a technique for effectively communicating the impact of another's behavior upon oneself;
- Clarifying Responses--brief questions and comments by which a listener can prompt further thinking by a speaker;
- Reflecting Feelings--techniques that enable a listener to indicate acceptance and accurate understanding of the speaker's feelings; and
- Reflecting Content--techniques that enable a listener to show interest and to indicate understanding of the speaker's message.

In the next four sessions teachers were taught a sequence of classroom management skills for minimizing and handling discipline problems. Techniques were taught for effectively communicating expectations and establishing classroom rules. In addition, skills were taught for managing discipline problems and for rewarding desired behaviors. These skills included systematic positive reinforcement of appropriate student behavior:

- Positive Nonverbal Cues (e.g., smile, nod);
- Positive Verbal Feedback (e.g., praise); and
- Tangible Reinforcers (e.g., token system);

and systematic discipline of inappropriate behavior:

- Negative Nonverbal Cues (e.g., eye contact, touch);
- Negative Verbal Feedback (e.g., request for behavioral change); and
- Time-out (e.g., isolation).

Activities to enhance student self-concept were introduced at five sessions and were the major component of the last session. Activities were taught that facilitate classroom discussion of students' experiences, talents, and achievements, and that elicit positive feedback from peers. Another approach to improving self-concept included modifying the regular curriculum to help students organize their work, assist each other, and gain recognition for their efforts.

One of the trainers observed the teachers in their classrooms at least three times. These visits began during the training and continued until May, 1980. After each visit, the trainer met briefly with the teacher to provide feedback on the teachers' classroom behavior.

Survey Administration Schedule and Procedures

Student survey. The student pretest was administered in October 1978, posttest 1 in May 1979, and posttest 2 in May 1980, by four substitute teachers trained in survey administration procedures. The questionnaires were administered during two regular classes. The Student Questionnaire and the Self Observation Scales were administered during the first session, and the Drug and Alcohol Survey (DAS) was administered during the second session. Make-up sessions were held for students who were absent at the time of the original sessions.

The administration procedure stressed confidentiality. Students were identified by their school district identification numbers. Questionnaires were pre-labeled with student names on the cover sheet and student identification numbers on page one. In a prepared statement, administrators assured students of complete confidentiality and explained the need for identification numbers as a way of tracking students over time. For the DAS administration, student were instructed to tear off the cover page that displayed their names to further enhance the confidentiality induction.

Teacher survey. The teacher pretest was administered in October 1978, posttest 1 in May 1979, and posttest 2 in May 1980, during faculty meetings at each school. To ensure the privacy of their responses, teachers were provided with questionnaires containing unique identifiers.

Student Self-Report Measures

Student pretest self-report data were obtained with the Self Observation Scales (SOS) (Stenner and Katzenmeyer, Note 6), the Intellectual Achievement Responsibility Questionnaire (IAR) (Crandall, Katkovsky, and Crandall, 1965), and the Drug and Alcohol Survey (DAS) (Moskowitz, Schaeffer, Condon, Schaps and Malvin, Note 7). The SOS is a nationally normed instrument which measures students' perceptions of themselves and their relationships to their peers, their teachers, and their school. The IAR measures the belief in one's own control over intellectual and academic performance.[4] The DAS assesses for

[4]Four items referring to "parents" were adapted to read "an adult who knows you" in order to conform to California Education Code. When passive parental permission for student participation is obtained researchers cannot ask questions about family life.

each of ten substances: the students' lifetime and current use, their attitudes toward use, their intentions to use, and their perceptions of peers' attitudes toward drug use.[5] In addition, the DAS contains measures of general drug attitudes, and the perceived benefits of using three different substances: alcohol, cigarettes, and "pills[6]."

Posttest 1 data were obtained with the SOS, the Student Questionnaire (SQ) (Moskowitz, Condon, Brewer, Schaps and Malvin, Note 8) and a revised version of the DAS. The SQ contained a) 18 items from the IAR; b) the Scholastic subscale from the secondary level of the Self Appraisal Inventory (Instructional Objectives Exchange, Note 9), a criterion-referenced measure of academic self-esteem; c) the Authority and Control and Interpersonal Relationships with Pupils subscales from the secondary level of the School Sentiment Index (Instructional Objectives Exchange, Note 10), a criterion-referenced measure of attitudes toward school; and d) a measure of perceived peer attitudes toward school developed for this study by adapting 11 items from eight instruments that measure attitudes toward school. The revised DAS assessed for each of ten substances: the students' lifetime and current use, their attitudes toward use, their intentions to use in the future, and their perceptions of peers' attitudes toward use and the prevalence of peer use.[7]

---

[5]The substances were alcohol, cigarettes, marijuana or hashish, inhalants, barbiturates or tranquilizers, amphetamines or stimulants, cocaine, PCP, LSD or psychedelics, and heroin or morphine. "Street" names were provided for most substances. Current use was defined as "during the past three months." Intentions were defined as "during the next two years." Peers were defined as "most students in my grade."

[6]Pills were defined as "pep pills, sleeping pills, uppers, downers, soapers."

[7]Current use was defined as "during the last four weeks." Intentions were defined as "during the next year."

In addition, the revised DAS measured drug knowledge, general drug attitudes, and the perceived positive (benefits) and negative (costs) consequences of using three different substances. Some item wordings and response formats differed from the earlier version.

Posttest 2 data were collected with a new version of the SQ and the revised DAS. The new SQ incorporated empirically derived scales from the original SQ and the SOS (Moskowitz, et al., Note 8). Unlike the original SQ, the new SQ employed a four-point Likert response format for most items.

The measures utilized for data analysis were derived from empirical scaling. The details of the scaling procedures and results have been reported earlier (Moskowitz, et al., Notes 7 and 8). The final pretest and posttest scales appear in Table 1, which lists the number of items contained in each scale, and the scale's internal consistency reliabilities estimated by coefficient alpha. The final scales included pretest and posttest measures of locus of control for success, locus of control for failure, academic self-esteem, social self-esteem, affective teaching climate, and attitudes toward school. The drug-related scales included several measures of drug attitudes; perceived benefits of alcohol, marijuana, and pill use; attitudes toward "soft" and "hard" drug use[8], perceived peer attitudes toward soft and hard drug use; and involvement in use for each of the ten substances[9]. Other posttest measures were perceived peer attitudes toward school; perceived costs of alcohol, cigarette, and pill use; and drug knowledge. The reliabilities

[8]The "soft" substances included alcohol, cigarettes, and marijuana; the "hard" substances included the other seven drugs.

[9]The involvement scales consisted of items assessing current use, lifetime use, and intentions to use.

TABLE 1

STUDENT PRETEST AND POSTTEST SCALES, NUMBER OF ITEMS AND INTERNAL CONSISTENCY RELIABILITIES (COEFFICIENT ALPHA)

	PRETEST			POSTTEST		
Subscale	N	Number of Items	Reliability	N	Number of Items	Reliability
Locus of Control: Success (Control Suc)	1944	13	.63	551	7	.66
Locus of Control: Failure (Control Fail)	1944	10	.61	551	7	.61
Academic Self-Esteem (Acad Self)	513	5	.65	551	12	.84
Social Self-Esteem (Social Self)	513	11	.80	551	11	.80
Affective Teaching Climate (Affec Climate)	513	8	.79	551	18	.89
Attitudes Toward School (Att School)	513	8	.82	551	8	.83
Perceived Peer Attitudes Toward School (Peer Att Sch)	-	NA[a]	-	551	8	.74
Drug Knowledge (Knowledge)	-	NA	-	586	7	.40
General Drug Attitudes (General Att)	473	17	.92	586	17	.93
Attitudes Toward Soft Drug Use (Soft Att)	473	3	.79	586	3	.76
Attitudes Toward Hard Drug Use (Hard Att)	473	7	.93	586	7	.93
Perceived Peer Attitudes Toward Soft Drugs (Soft Peer Att)	473	3	.87	586	3	.84
Perceived Peer Attitudes Toward Hard Drugs (Hard Peer Att)	473	7	.96	586	7	.96
Perceived Benefits of Alcohol Use (Alc Benefits)	473	8	.85	586	8	.85
Perceived Benefits of Marijuana Use (Pot Benefits)	473	8	.89	586	8	.91

Subscale	PRETEST N	PRETEST Number of Items	PRETEST Reliability	POSTTEST N	POSTTEST Number of Items	POSTTEST Reliabili
Perceived Benefits of Pill Use (Pill Benefits)	473	8	.92	586	8	.91
Perceived Costs of Alcohol Use (Alc Costs)	-	NA	-	586	5	.84
Perceived Costs of Marijuana Use (Pot Costs)	-	NA	-	586	5	.90
Perceived Costs of Pill Use (Pill Costs)	-	NA	--	586	5	.89
Perceived Peer Use of Soft Drugs (Soft Peer Use)	-	NA	-	586	3	.82
Perceived Peer Use of Hard Drugs (Hard Peer Use)	-	NA	-	586	7	.96
Involvement in Alcohol Use (Alc Involve)	473	3	.92	586	3	.88
Involvement in Cigarette Use (Cig Involve)	473	3	.92	586	3	.91
Involvement in Marijuana Use (Pot Involve)	473	3	.95	586	3	.95
Involvement in Inhalant Use (Inh Involve)	473	3	.86	586	3	.70
Involvement in Barbiturate Use (Barb Involve)	473	3	.84	586	3	.89
Involvement in Amphetamine Use (Amp Involve)	473	3	.88	586	3	.90
Involvement in Cocaine Use (Coc Involve)	473	3	.75	586	3	.88
Involvement in PCP Use (PCP Involve)	473	3	.83	586	3	.86
Involvement in LSD Use (LSD Involve)	473	3	.70	586	3	.87
Involvement in Heroin Use (Heroin Involve)	473	3	.93	586	3	.77

obtained were adequate for all scales except drug knowledge.[10] Pretest and posttest reliabilities for equivalent scales were highly consistent despite some differences in item wordings and response formats.

Student archival outcome data. Student discipline records for four months in the spring semesters of 1979 and 1980 were obtained from both schools. These records were maintained by the deans in the two schools to document student behavior problems. Two indices were constructed for each year: a) a drug behavior problem index (Drug Problems) consisting of categories involving use, possession or sale of tobacco, alcohol, marijuana and other drugs; and b) a general behavior problem index (Non-drug Problems) containing categories for all other types of student misbehavior.

Other student records were obtained from the school district. The total number of unexcused absences for each school year (Unex Abs) was used as a measure of student attendance. This type of absence occurs when a student does not provide the school with a parental excuse indicating that the student was sick. Grade point average (GPA) for each spring semester, where academic grades from all courses were weighted equally, served as a measure of academic achievement. An index of exposure to the ECM-trained teachers (ECM Expos) was created for students in the experimental school. This index equalled the the number of courses in which the student was enrolled that were taught by teachers trained in ECM. Finally, students' sex and ethnicity were obtained from district records.

Teacher outcome data. Teacher pretest and posttest self-report data were obtained with different versions of the Teacher Questionnaire, an instrument

[10]Because the Drug Knowledge items were difficult, there must have been a substantial amount of guessing reducing internal consistency.

developed for this study. This instrument included measures of a) satisfaction with teaching adapted from the Purdue Teacher Morale Inventory (Rempel and Bentley, 1964); b) faculty cohesiveness adapted from the Teacher Cooperation Subscale of the Teacher Attitude and Classroom Climate Questionnaire (Kaufman, Semmel & Agard, Note 11) and from the Intimacy Subscale of the Organization Climate Description Questionnaire (Halpin and Croft, 1963); and c) the importance and effectiveness of achieving teaching objectives related to the in-service training, a measure developed for this study. The number of items included in all pretest and posttest scales and the scales' internal consistency reliabilities estimated by coefficient alpha are shown in Table 2 for grade 7-9 teachers.

Data Analysis

Two approaches were employed in the analysis of student data. In the first approach, treatment versus control group differences were examined. This approach included analyses of pretest data which explored biases due to attrition and initial equivalence. Then posttest data were analyzed controlling for some of the initial differences. The second approach examined students within the treatment group in order to determine whether posttest changes were related to the students' amount of exposure to ECM-trained teachers.

A similar strategy was employed in the anlaysis of the teacher data. First, treatment-control differences were examined. Then, differences between treatment school teachers who participated in either year of ECM and control teachers were examined.

In the present study, both the assignment to condition and the delivery of treatment was at the school level. Therefore, the appropriate unit of

TABLE 2

TEACHER PRETEST (N = 95) AND POST-TEST (N = 76) SCALES, NUMBER OF ITEMS, AND INTERNAL CONSISTENCY RELIABILITIES (COEFFICIENT ALPHA)

	Pretest		Posttest	
Scale	Number of Items	Reliability	Number of Items	Reliability
ECM Objectives (ECM Object)	6	.70	6	.78
Teacher Satisfaction (Teacher Satis)	3	.79	8	.82
Faculty Cohesiveness (Faculty Cohes)	7	.89	7	.86

analysis is the school. However, each condition consists of only one school which precludes performing statistical analysis at the school level. Analysis of data at the student level is likely to produce spurious results due to both excess power and bias produced by the statistical interdependence among students within each school. Since these data must be analyzed at the student level, we have decided to compensate somewhat for the excess power by setting the Type I error for each analysis at .01. With this alpha level and power set at .80, the analysis of variance is capable of detecting a minimum effect size of .48 SD to .62 SD.[11] The analysis of covariance is capable of detecting a minimum effect size of .42 SD to .55 SD with a pretest posttest correlation of .34 (the median $\underline{r}$). As many univariate analyses were conducted, isolated effects must be interpreted cautiously, because they may be due to Type I error. Hence, interpretation of results is based on patterns in the data rather than isolated findings.

Rules were established for handling missing data in computing scale scores. A scale score was computed for a student if at least 60% of the items comprising that scale were completed. Any missing item score was replaced by the mean for that item in the appropriate cell of the experimental design. This procedure utilized most of the item data and provided unbiased cell means. However, the procedure constrained cell variances and inflated degrees of freedom artificially. When more than 40% of the items comprising a scale were missing, the student received a missing value for that scale, and the case was dropped from any analysis involving that scale.

[11]SD refers to the pooled within-groups standard deviation.

Process Evaluation

Teacher Feedback on the ECM Training Sessions

At the end of all but the final training session, teachers anonymously completed a one-page "feedback form." This form solicited ratings and comments regarding the session. Teachers rated each session on interest, organization, usefulness, and enjoyableness, using five-point rating scales with higher numbers signifying more positive ratings.

Teachers rated all sessions favorably. Of the 24 separate ratings (four per session), 20 averaged above 4.5, and none averaged less than 4.4. The teachers frequently wrote compliments and rarely had critical comments.

Questionnaire Surveys of Participating Teachers

At the completion of training (January 1980) and again near the end of the school year (May 1980), all participating teachers in the experimental group completed questionnaires about ECM implementation. Teachers reported how often they used each in-service skill, rated the utility of each skill, and rated their own mastery of each skill. Table 3 summarizes the year-end data. The first four skills listed in Table 3 are the communication skills; the next six are classroom management skills; the last "skill"--self-concept enhancing activities--is the series of classroom exercises used apart from the teaching of the regular curriculum.

At the end of the year, more than half of the teachers reported using three of the four communication skills at least several times per week. On a daily

basis, reflecting feelings were most widely used, and clarifying responses were least used. Most of the teachers reported using three classroom management skills (positive nonverbal cues, positive verbal feedback, and negative nonverbal cues) at least several times per week, and many reported using these skills on a daily basis. Over half of the teachers reported using self-concept enhancement activities on a weekly basis.

With regard to the utility of the skills, positive nonverbal cues and positive verbal feedback were considered most valuable, and tangible reinforcers and time-out were considered least valuable. Thus, perceptions of utility were strongly related to reported use. The teachers generally rated their own mastery of the skills as "fair" to "good," seeing themselves least adept at using tangible reinforcers, negative verbal feedback, time-out, and self-concept enhancement activities.

The mid-year questionnaire asked the teachers to evaluate the in-service course as a whole, using five-point rating scales. The teachers' ratings were very favorable with respect to interest (M = 4.39), organization (M = 4.50), usefulness (M = 4.11), and enjoyableness (M = 4.56). The teachers also rated the trainers highly.

Trainer Observations of ECM Classroom Implementation

One of the trainers visited each classroom three or four times between December and April to observe the teachers applying the ECM skills. These observations averaged 43 minutes. After each classroom observation, the trainer recorded a) approximately how frequently each skill was observed, and b) how well each skill was applied.

TABLE 3

TEACHERS' REPORTS ON FREQUENCY, UTILITY, AND QUALITY OF ECM SKILL IMPLEMENTATION AT THE END OF THE YEAR (N = 26)

In-Service Skill	Percentage of Teachers Using the Skill at Least Several Times per Week	Percentage of Teachers Using the Skill at Least Every Day	Mean Ratings of Utility of the Skill (5=High; 1=Low)	Mean Ratings of Mastery of the Skill[a] (4=Excellent; 1=Poor)
I-Messages	64	24	3.92	2.83
Clarifying Responses	46	19	3.75	2.68
Reflecting Feelings	58	31	3.92	2.92
Reflecting Content	62	27	4.00	2.80
Positive Verbal Feedback	76	36	4.36	2.92
Positive Nonverbal Cues	96	60	4.52	3.24
Tangible Reinforcers	22	04	2.46	2.37
Negative Verbal Feedback	46	19	3.76	2.68
Negative Nonverbal Cues	80	44	3.88	3.00
Time-Out	15	08	3.36	2.68
Self-Concept Enhancement	52	09	4.04	2.74

[a]Teachers who did not use a skill are not included in the mean rating for that skill.

Teachers used some skills much more frequently than others. Among the communication skills, teachers used reflecting content and clarifying responses rather frequently, and I-messages and reflecting feelings infrequently. Among the classroom management skills, teachers only used positive verbal feedback frequently. Self-concept enhancing activities were observed during 37% of the classroom visits. Teachers applied the skills with roughly equal competency. The trainers' ratings of implementation quality were in the "B" to "B+" range for most skills, varying between 3.50 and 4.44 on a five-point scale, and averaging 4.16 (SD = .27) across all skills.

Some teachers used more of the skills than others. At the extremes, one teacher used seven different skills in more than half of the observed sessions; whereas another used only three different skills (M = 4.26, SD = 1.33). The teachers also differed in how well they applied the skills. Here, the range in the trainers' average quality ratings (across skills and over classroom visits) was between 3.18 (i.e., "C") for one teacher and 4.60 (i.e., "B+") for another. The average quality rating for all teachers was 4.20 (SD = .36).

Additional Observations of ECM Classroom Implementation

The observations described above were done by the trainer; we now describe observations done by a researcher who was not involved in the training. The researcher also observed the frequency of teacher implementation of ECM-related behaviors in the classroom. However, only verbal behaviors were recorded; nonverbal behaviors and self-concept activities were not recorded.

Seven ECM-trained teachers were randomly selected for observation. Observational data were collected on three visits to each teacher's classroom. The first visit occurred early in the training, the second visit occurred about one month after training ended, and the final visit occurred approximately ten weeks after the training ended. On each visit, the researcher coded teacher behavior for 45 minutes.[12] A total of 13.5 hours of observational data were collected during 18 visits.[13]

Few ECM skills were observed. Reflecting Content was the only communication skill used by a high proportion of teachers. Five teachers were observed using this skill, but none of them used it regularly. Clarifying responses were used regularly by two of the teachers; however, none of the other teachers was observed to use them. Only three instances of I-messages and reflecting feelings were observed during 18 classroom visits.

Negative verbal feedback was the only classroom management skill used by most teachers, but this skill was not used regularly. Use of tangible reinforcers or time-out was not observed. A counterproductive behavior, teacher criticism, was included in the observation system. Four teachers were observed using this behavior irregularly.

---

[12]Observational data collected by a second researcher have not been reported due to problems with observer agreement. That most of the skills occurred infrequently made it difficult to adequately measure observer agreement. The data reported here are for the observer deemed most skilled by the training and research staffs at identifying ECM behaviors. The skilled observer identified fewer instances of ECM behaviors than the other observer because of her ability to discriminate ECM behaviors from ordinary teacher behaviors.

[13]Only two visits were made to observe one teacher and one visit to observe another because these individuals left teaching during the school year.

ECM Classroom Implementation

ECM Classroom implementation was measured by three different methods (teacher self-reports, trainer observations, and researcher observations). In general, teachers used reflecting content and did not use I-messages, reflecting feelings, tangible reinforcers or time-out. Inconsistent results were obtained for the other skills. Each method noted low amounts of implementation, particularly the observational methods.

Two factors contributed to the inconsistent findings. First, variation in frequency of occurrence of ECM behaviors was substantial. In order for classroom observations to provide reliable estimates of implementation, substantially more hours of data collection would be needed. Second, different methods contain different biases. The teacher self-reports may have been exaggerated toward reporting greater implementation due to social desirability. Teacher self-report data also may have been inaccurate due to misuse of the ECM skill definitions, memory problems, and a crude response format. Finally, the researchers' observations were more conservative than the trainer's because the researcher reordered only ideal ECM behaviors, whereas the trainer recorded less than perfect behaviors and then assigned them quality ratings.

Results

Initial Equivalence--Teachers

Analyses of pretest and background measures were conducted to determine whether a) teachers in the experimental and control conditions were equivalent and, b) teachers in the experimental school who participated in the training were similar to nonparticipating teachers.

Experimental and control teachers had similar amounts of teaching experience. However, in the three years prior to this study, fewer experimental teachers than control teachers had in-service training in building students' self-esteem (10% vs. 44%), Schools Without Failure (47% vs. 82%), and Values Clarification (14% vs. 41%). Experimental teachers were initially lower on Faculty Cohesiveness, F (1,50) = 17.94, $p < .001$, but were similar to control teachers on Teacher Satisfaction, F (1,50) = 3.37, ns, and ECM Objectives, F (1,50) = 1.54, ns.

Experimental participants were similar to experimental nonparticipants with one exception. They were more likely to have had prior in-service training in Schools Without Failure (68% vs. 18%).

Analysis of Teacher Outcomes

Experimental and control teachers were compared on the three posttest outcome measures controlling for their corresponding pretest scores. Analyses of covariance revealed no treatment condition differences on ECM Objectives, F (1,64) < 1, Faculty Cohesiveness, F (1,66) < 1, or Teacher Satisfaction, F (1,66) = 1.51, ns.

Similar analyses compared teachers in the experimental school who completed the training with control teachers. Again, no differences were found on ECM Objectives, F (1,47) < 1, or on Faculty Cohesiveness, F (1,49) <1. A significant difference was found on Teacher Satisfaction, F (1,49) = 4.32, p <.05, with participants scoring .55 SD higher than control teachers.

Initial Equivalence and Attrition--Students

Initial nonequivalence between conditions affects both the justification for attributing posttest differences to the treatment (internal validity) and the justification for generalizing treatment effects to the student population at pretest (external validity). Attrition affects internal validity if students missing from one condition are systematically different from those missing from another condition. Attrition also affects external validity if the attrited students are systematically different from those who remain in the sample.

Analyses were conducted to determine whether a) students in the experimental and control conditions were equivalent on the pretest measures and b) the experimental and control groups were affected differentially by attrition. The means and standard deviations for all student pretest and posttest measures are summarized in Tables 4 and 5 by sex and treatment condition for grades 8-9. The final posttest results will be discussed later.

As a test for initial equivalence between conditions, two-way analyses of variance were performed for each grade-sex group on each of the student pretest measures, with treatment condition (experimental vs. control) and

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR STUDENT DATA
BY SEX BY TREATMENT CONDITION FOR GRADE 8

		Male Students				Female Students			
		Experimental		Control		Experimental		Control	
Measure	Test	M	SD	M	SD	M	SD	M	SD
Control Succ	Pre	1.82	.17	1.80	.16	1.83	.15	1.85	.12
	Post 1	1.83	.21	1.85	.18	1.86	.17	1.90	.14
	Post 2	1.78	.19	1.76	.19	1.82	.15	1.83	.19
Control Fail	Pre	1.72	.20	1.63	.24	1.70	.19	1.67	.21
	Post 1	1.73	.24	1.76	.22	1.75	.21	1.82	.19
	Post 2	1.70	.24	1.68	.24	1.74	.19	1.74	.24
Acad Self	Pre	1.83	.22	1.85	.20	1.83	.21	1.82	.24
	Post 1	2.41	.39	2.45	.42	2.35	.41	2.48	.39
	Post 2	2.74	.45	2.81	.52	2.76	.54	2.81	.54
Social Self	Pre	1.80	.21	1.76	.25	1.81	.21	1.82	.19
	Post 1	1.79	.25	1.79	.23	1.82	.23	1.89	.14
	Post 2	2.95	.44	3.08	.32	3.10	.42	3.17	.38
Affec Climate	Pre	1.82	.24	1.82	.19	1.88	.19	1.84	.18
	Post 1	2.28	.36	2.38	.31	2.34	.38	2.46	.36
	Post 2	2.60	.50	2.72	.53	2.76	.48	2.79	.57
Att Sch	Pre	1.68	.26	1.74	.25	1.83	.22	1.86	.17
	Post 1	1.60	.31	1.68	.29	1.70	.31	1.78	.23
	Post 2	2.32	.64	2.46	.76	2.66	.70	2.79	.63
Peer Att Sch	Post 1	2.59	.38	2.71	.42	2.67	.42	2.75	.35
	Post 2	2.40	.41	2.52	.44	2.54	.39	2.45	.38
GPA	Pre	3.59	.57	3.73	.47	3.70	.53	3.82	.54
	Post 1	3.49	.56	3.75	.53	3.42	.57	3.70	.59
	Post 2	3.27	.75	3.59	.76	3.51	.87	3.73	.62
Unex Abs	Post 1	1.05	2.16	1.82	2.11	1.06	1.69	1.24	1.99
	Post 2	1.51	2.13	1.64	2.23	2.10	5.52	1.35	1.70
Non-drug Prob	Post 1	1.23	2.15	.30	.86	.44	1.02	.37	1.12
	Post 2	1.31	2.50	.68	1.66	.71	1.51	.26	.71
Drug Prob	Post 1	.02	.13	.00	.00	.01	.10	.04	.19
	Post 2	.35	.23	.00	.00	.07	.25	.09	.35

Table 4 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
Knowledge	Post 1	3.25	1.41	3.06	1.46	2.93	1.46	2.44	1.13
	Post 2	2.57	1.28	2.45	1.17	2.77	1.21	2.33	1.08
General Drug Att	Pre	1.89	.63	1.92	.64	1.86	.59	1.98	.73
	Post 1	1.98	.78	2.04	.68	2.10	.88	2.23	.86
	Post 2	2.32	.93	2.32	.94	2.26	.86	2.21	.91
Soft Att	Pre	1.72	.66	1.70	.64	1.75	.73	1.83	.77
	Post 1	1.91	.79	1.89	.70	2.13	.85	2.23	1.04
	Post 2	2.24	.89	2.24	1.00	2.21	.92	2.18	.96
Hard Att	Pre	1.19	.37	1.18	.38	1.25	.49	1.22	.50
	Post 1	1.30	.51	1.26	.43	1.46	.76	1.42	.66
	Post 2	1.52	.92	1.49	.85	1.37	.55	1.33	.61
Soft Peer Att	Pre	2.15	.99	2.13	.86	2.25	.97	2.25	.96
	Post 1	2.51	1.05	2.33	1.05	2.78	1.07	3.01	1.15
	Post 2	2.89	1.12	2.67	1.09	3.02	1.02	3.28	1.16
Hard Peer Att	Pre	1.55	.81	1.48	.68	1.64	.80	1.47	.60
	Post 1	1.80	.99	1.57	.83	1.94	1.00	2.02	1.11
	Post 2	2.03	1.16	1.92	.98	2.09	.90	2.15	1.01
Alc Benefits	Pre	1.57	.61	1.50	.50	1.54	.60	1.49	.63
	Post 1	1.58	.69	1.56	.59	1.66	.69	1.67	.68
	Post 2	1.79	.77	1.80	.88	1.70	.71	1.76	.79
Pot Benefits	Pre	1.59	.67	1.47	.52	1.50	.64	1.54	.77
	Post 1	1.58	.73	1.63	.72	1.69	.80	1.67	.75
	Post 2	1.83	.94	1.88	.94	1.68	.77	1.74	.88
Pill Benefits	Pre	1.53	.61	1.39	.52	1.40	.54	1.32	.51
	Post 1	1.48	.72	1.34	.51	1.51	.63	1.37	.50
	Post 2	1.47	.80	1.49	.75	1.46	.60	1.52	.79
Alc Costs	Post 1	1.92	.71	1.88	.62	1.98	.71	1.98	.70
	Post 2	2.11	.70	2.14	.82	2.01	.67	2.00	.73
Pot Costs	Post 1	1.72	.71	1.79	.77	1.87	.83	1.95	.79
	Post 2	2.02	.86	1.94	.89	1.97	.77	1.92	.85
Pill Costs	Post 1	1.57	.67	1.50	.58	1.72	.73	1.60	.75
	Post 2	1.70	.83	1.64	.77	1.75	.73	1.56	.64
Soft Peer Use	Post 1	28.66	21.48	21.72	17.03	30.01	17.28	34.34	24.00
	Post 2	33.30	21.48	33.68	19.62	36.36	19.18	44.52	22.33
Hard Peer Use	Post 1	8.94	13.21	4.46	7.86	11.59	13.37	9.01	13.10
	Post 2	9.13	16.10	10.08	12.81	8.48	13.40	9.56	12.20

Table 4 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
Alc Involve	Pre	2.09	1.15	2.24	1.29	1.88	.98	2.07	1.25
	Post 1	2.16	.94	2.27	1.05	2.31	.97	2.32	1.00
	Post 2	2.66	1.08	2.48	1.12	2.47	1.09	2.33	1.07
Cig Involve	Pre	1.48	.97	1.52	1.10	1.56	.97	1.78	1.32
	Post 1	1.50	.71	1.62	1.00	1.97	1.22	2.17	1.27
	Post 2	1.77	1.00	1.86	1.18	2.12	1.33	2.38	1.52
Pot Involve	Pre	1.12	.46	1.37	.91	1.10	.42	1.31	.74
	Post 1	1.34	.84	1.57	.98	1.45	.97	1.61	1.04
	Post 2	1.69	1.10	1.96	1.35	1.65	1.03	1.77	1.22
Inhalant Involve	Pre	1.21	.67	1.26	.71	1.08	.30	1.17	.70
	Post 1	1.08	.33	1.07	.20	1.12	.35	1.13	.44
	Post 2	1.24	.71	1.21	.57	1.11	.39	1.11	.42
Barbiturate Involve	Pre	1.05	.20	1.04	.13	1.01	.08	1.03	.16
	Post 1	1.04	.17	1.04	.17	1.06	.22	1.11	.32
	Post 2	1.17	.59	1.18	.54	1.07	.33	1.06	.24
Amphetamine Involve	Pre	1.02	.11	1.06	.32	1.01	.05	1.03	.17
	Post 1	1.04	.20	1.04	.17	1.09	.33	1.07	.23
	Post 2	1.18	.57	1.23	.67	1.16	.58	1.12	.45
Cocaine Involve	Pre	1.03	.20	1.05	.23	1.02	.17	1.01	.05
	Post 1	1.04	.15	1.00	.01	1.09	.32	1.08	.25
	Post 2	1.26	.69	1.17	.50	1.14	.50	1.22	.75
PCP Involve	Pre	1.00	.03	1.04	.18	1.01	.11	1.01	.05
	Post 1	1.01	.08	1.00	.01	1.08	.40	1.02	.10
	Post 2	1.15	.57	1.10	.44	1.01	.08	1.04	.27
LSD Involve	Pre	1.01	.05	1.00	.00	1.00	.00	1.00	.00
	Post 1	1.01	.07	1.03	.13	1.07	.34	1.03	.14
	Post 2	1.10	.39	1.14	.64	1.01	.11	1.10	.51
Heroin Involve	Pre	1.02	.09	1.02	.11	1.04	.35	1.03	.16
	Post 1	1.01	.13	1.00	.00	1.06	.30	1.02	.10
	Post 2	1.16	.67	1.16	.63	1.01	.14	1.03	.14

TABLE 5

MEANS AND STANDARD DEVIATIONS FOR STUDENT DATA
BY SEX BY TREATMENT CONDITION FOR GRADE 9

		Male Students				Female Students			
		Experimental		Control		Experimental		Control	
Measure	Test	M	SD	M	SD	M	SD	M	SD
Control Succ	Pre	1.78	.18	1.81	.16	1.80	.17	1.85	.14
	Post 1	1.83	.18	1.82	.18	1.87	.17	1.85	.18
	Post 2	1.86	.15	1.78	.20	1.84	.15	1.84	.18
Control Fail	Pre	1.64	.23	1.68	.24	1.65	.21	1.70	.23
	Post 1	1.77	.23	1.67	.25	1.77	.19	1.75	.22
	Post 2	1.75	.21	1.67	.26	1.78	.18	1.77	.22
Acad Self	Pre	1.77	.25	1.81	.24	1.76	.26	1.86	.20
	Post 1	2.34	.36	2.41	.36	2.32	.44	2.54	.43
	Post 2	2.76	.44	2.75	.46	2.74	.51	3.00	.49
Social Self	Pre	1.82	.18	1.81	.18	1.87	.16	1.90	.13
	Post 1	1.82	.18	1.84	.19	1.89	.16	1.90	.15
	Post 2	3.03	.33	3.00	.40	3.13	.30	3.21	.33
Affec Climate	Pre	1.73	.28	1.84	.22	1.77	.27	1.91	.18
	Post 1	2.24	.32	2.25	.34	2.25	.39	2.38	.39
	Post 2	2.78	.39	2.62	.49	2.77	.51	2.92	.48
Att Sch	Pre	1.58	.28	1.61	.28	1.74	.26	1.82	.23
	Post 1	1.53	.27	1.56	.28	1.63	.31	1.70	.30
	Post 2	2.43	.53	2.44	.67	2.58	.63	2.70	.68
Peer Att Sch	Post 1	2.53	.36	2.58	.40	2.53	.41	2.65	.37
	Post 2	2.54	.32	2.43	.37	2.50	.41	2.48	.43
GPA	Pre	3.35	.64	3.50	.58	3.49	.54	3.72	.59
	Post 1	3.37	.68	3.45	.63	3.47	.57	3.73	.64
	Post 2	3.39	.70	3.61	.78	3.52	.67	3.95	.77
Unex Abs	Post 1	1.71	2.57	1.56	2.56	1.51	2.19	1.78	3.61
	Post 2	2.19	2.83	2.44	3.44	2.31	3.86	1.71	2.66
Non-drug Prob	Pre	.68	1.42	.28	.67	.13	.53	.09	.37
	Post 1	1.29	2.50	.49	.80	.73	1.86	.24	.72
	Post 2	1.27	2.50	.32	.68	.54	1.46	.19	.52
Drug Prob	Pre	.00	.00	04	.26	.01	.09	.00	.00
	Post 1	.01	.09	.01	.12	.04	.33	.01	.11
	Post 2	.05	.21	.04	.26	.04	.24	.02	.15

Table 5 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
Knowledge	Post 1	3.38	1.33	3.07	1.34	3.20	1.23	3.34	1.42
	Post 2	2.90	1.29	2.74	1.42	2.98	1.32	2.80	1.37
General Drug Att	Pre	2.18	.75	2.36	.81	2.20	.87	2.05	.83
	Post 1	2.24	.77	2.48	.94	2.50	.79	2.24	.87
	Post 2	2.42	.83	2.65	.89	2.52	.84	2.35	.92
Soft Att	Pre	2.01	.81	2.09	.79	2.29	.95	1.88	.91
	Post 1	2.15	.79	2.48	.91	2.45	.76	2.24	.88
	Post 2	2.27	.80	2.57	.87	2.58	.84	2.45	.97
Hard Att	Pre	1.33	.55	1.41	.62	1.53	.72	1.24	.43
	Post 1	1.37	.49	1.63	.76	1.55	.64	1.46	.66
	Post 2	1.39	.56	1.86	1.02	1.59	.67	1.51	.76
Soft Peer Att	Pre	2.76	.97	2.82	1.05	3.29	1.08	3.13	1.19
	Post 1	3.09	.90	3.11	1.13	3.46	.81	3.10	1.09
	Post 2	3.09	.96	3.10	1.00	3.47	.77	3.18	1.02
Hard Peer Att	Pre	1.78	.91	1.96	.99	2.39	1.06	2.12	1.05
	Post 1	2.01	1.03	2.43	1.24	2.38	.92	2.18	1.04
	Post 2	2.00	.90	2.16	1.06	2.24	.91	2.25	1.05
Alc Benefits	Pre	1.75	.66	1.75	.77	1.64	.68	1.59	.68
	Post 1	1.84	.72	1.94	.80	1.88	.74	1.70	.69
	Post 2	1.92	.72	2.07	.80	2.00	.71	1.73	.75
Pot Benefits	Pre	1.87	.88	1.83	.94	1.82	.90	1.74	.91
	Post 1	1.92	.89	2.10	.95	1.97	.81	1.82	.80
	Post 2	1.89	.87	2.12	1.01	2.07	.86	1.84	.86
Pill Benefits	Pre	1.61	.73	1.61	.72	1.56	.70	1.55	.74
	Post 1	1.54	.67	1.62	.79	1.70	.76	1.54	.63
	Post 2	1.46	.67	1.65	.92	1.70	.78	1.51	.70
Alc Costs	Post 1	2.11	.69	2.15	.75	2.35	.62	2.02	.64
	Post 2	2.22	.67	2.39	.72	2.38	.66	1.99	.75
Pot Costs	Post 1	2.07	.78	2.20	.85	2.27	.76	1.99	.78
	Post 2	2.12	.84	2.30	.81	2.37	.77	2.05	.83
Pill Costs	Post 1	1.68	.65	1.75	.75	1.90	.72	1.75	.70
	Post 2	1.66	.65	1.87	.79	1.93	.72	1.70	.73
Soft Peer Use	Post 1	38.68	19.16	41.61	20.68	48.08	21.08	46.95	22.88
	Post 2	42.85	19.30	42.09	16.44	50.34	19.41	49.13	19.50
Hard Peer Use	Post 1	8.34	12.75	16.10	15.84	14.67	15.55	13.80	15.06
	Post 2	8.71	15.91	10.25	9.39	11.39	13.62	12.16	10.79

Table 5 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
Alc Involve	Pre	2.52	1.31	2.72	1.35	2.57	1.45	2.36	1.51
	Post 1	2.41	.95	2.63	1.05	2.68	.98	2.26	1.06
	Post 2	2.77	1.03	2.94	1.07	2.98	1.01	2.48	1.03
Cig Involve	Pre	1.88	1.44	1.88	1.22	2.36	1.72	2.01	1.56
	Post 1	1.68	.96	1.80	1.00	2.29	1.37	2.17	1.36
	Post 2	1.76	1.06	2.05	1.34	2.51	1.36	2.35	1.44
Pot Involve	Pre	1.60	1.16	1.71	1.41	1.51	1.07	1.51	1.06
	Post 1	1.75	1.06	2.01	1.32	1.82	1.19	1.73	1.10
	Post 2	2.01	1.21	2.39	1.46	2.16	1.26	2:02	1.31
Inhalant Involve	Pre	1.09	.28	1.30	.72	1.21	.60	1.07	.30
	Post 1	1.08	.27	1.31	.65	1.17	.42	1.07	.23
	Post 2	1.15	.43	1.33	.75	1.10	.30	1.11	.38
Barbiturate Involve	Pre	1.07	.28	1.23	.57	1.21	.57	1.11	.39
	Post 1	1.11	.38	1.21	.61	1.19	.40	1.04	.25
	Post 2	1.15	.45	1.27	.63	1.23	.61	1.14	.48
Amphetamine Involve	Pre	1.09	.42	1.10	.28	1.16	.63	1.10	.51
	Post 1	1.06	.27	1.28	.71	1.22	.49	1.15	.44
	Post 2	1.20	.58	1.36	.72	1.41	.77	1.30	.76
Cocaine Involve	Pre	1.04	.16	1.17	.54	1.10	.42	1.05	.19
	Post 1	1.08	.32	1.28	.79	1.17	.47	1.08	.30
	Post 2	1.21	.61	1.42	.78	1.20	.45	1.28	.70
PCP Involve	Pre	1.03	.13	1.06	.27	1.08	.33	1.01	.06
	Post 1	1.03	.25	1.12	.42	1.10	.44	1.03	.14
	Post 2	1.07	.42	1.12	.34	1.06	.27	1.05	.29
LSD Involve	Pre	1.02	.10	1.05	.26	1.03	.18	1.04	.18
	Post 1	1.06	.28	1.04	.26	1.08	.30	1.03	.22
	Post 2	1.04	.21	1.19	.50	1.09	.31	1.10	.38
Heroin Involve	Pre	1.02	.08	1.02	.10	1.04	.17	1.01	.11
	Post 1	1.04	.29	1.10	.36	1.05	.26	1.01	.05
	Post 2	1.03	.19	1.11	.33	1.04	.25	1.04	.17

attrition status (attrited vs. non-attrited) as the factors. A main effect for treatment condition would suggest initial nonequivalence, and hence limit both types of validity. A main effect for attrition status would limit external validity. The interaction between treatment condition and attrition status would limit internal validity.

For grade 8 males no significant treatment x attrition interaction or treatment main effect was obtained. Significant attrition status main effects were obtained on four measures. As compared to non-attrited students, attrited students had lower GPA, and were higher on General Drug Att, Soft Att, and Pot Involve.

For grade 8 females no significant treatment x attrition interaction or treatment main effect was obtained. Significant attrition status main effects were obtained on seven measures. As compared to non-attrited students, attrited students were lower on Control Succ, and higher on Pill Benefits, Pot, Barb, Coc PCP and LSD Involve.

For grade 9 males no significant treatment x attrition was obtained, but one treatment main effect obtained significance. As compared to their controls, the experimental students were lower on Affec Climate. Significant attrition status main effects were obtained on 13 measures. As compared to non-attrited students, attrited students were lower on Acad Self, Social Self, Affec Climate, and Att Sch, and were higher on 13 of the 18 drug-related measures.

For grade 9 females no treatment x attrition interaction obtained significance, but two treatment main effects did. As compared to controls, experimental students were lower on Affec Climate and higher on Hard Att.

Two attrition status main effects obtained significance. As compared to non-attrited students, attrited students were lower on Att Sch and higher on Pot Involve.

In sum, there was substantial evidence for initial equivalence of treatment and control students. However, the teaching climate was perceived more positively in the control school by the 9th graders. A consistent pattern of effects for attrition status indicated that attrited students were less pro-school and more pro-drug than students who remained in the analysis. These results limit the generalizability of our findings.

Analysis of Student Outcomes

In order to attribute posttest differences between conditions to the treatment, initial differences between treatment conditions must be statistically controlled. Ideally, each posttest measure should be adjusted for all related pre-existing differences and the pretest measures should be error free. The analysis of covariance using the corresponding pretest as a covariate is a common technique that approximately controls for pre-existing differences; however, with a nonequivalent control group design this technique does not assure proper adjustment for initial differences (Reichardt, 1979).

Due to the heterogeneity of variance and covariance in most of the measures, separate analyses of covariance were performed for each grade-sex combination. Although this approach substantially increases the number of statistical tests performed (by a factor of four) and hence the chance of Type I error, it is less likely to violate the assumptions underlying the

analysis.[14] In addition, it obviates the need to conduct a posteriori tests of simple effects. The large number of tests conducted (140) requires a search for meaningful patterns.

A one-way (treatment condition) analysis of covariance was conducted on each posttest measure with the corresponding pretest as the covariate.[15] Exceptions to this procedure were made for those variables not measured at pretest: Att Sch was used as a covariate for Peer Att Sch; GPA for Unex Abs; Soft Att for Alc Costs, Pot Costs and Pill Costs; Soft Peer Att for Soft Peer Use; Hard Peer Att for Hard Peer Use; Pot Involve for Knowledge and Drug Problems.[16] In addition, for the grade 8 analyses, GPA was used as a covariate for Non-drug Problems.

Table 6 summarizes the results of these ANCOVAS. No significant treatment effects were obtained for grade 8 males or for grade 8 females. Positive treatment effects were found for grade 9 males on Affec Climate, Control Succ, Control Fail, and Hard Att. For grade 9 females, no positive treatment effects were found, and negative effects were obtained on GPA, Alc Benefits, Alc Costs, and Alc Involve.

---

[14] The assumptions for the analysis of covariance specify that the within-group regression coefficients are homogeneous, that the treatment and regression effects are additive and related linearly to the dependent variable, and that the error term is normally distributed with a mean of zero and the same variance for each group.

[15] Additional analyses of covariance employed the corresponding pretest and the pretest-treatment interaction as covariates. The latter term allows for different regression slopes in the two conditions. In 14 of the 140 analyses (3%), the pretest-treatment interaction term was significant. These results did not form any consistent pattern, nor did they substantially affect the interpretation of the results from the ANCOVA employing only the pretest as a covariate.

[16] Pretest Drug Problems was not used in this or any other analysis because it had little variance and did not correlate with posttest Drug Problems.

TABLE 6

SUMMARY OF ANALYSES OF COVARIANCE ON STUDENT DATA

Measure	Grade 8 Male	Grade 8 Female	Grade 9 Male	Grade 9 Female
Affec Climate	1.42	<1	13.58^{+}	<1
Social Self	5.25	1.34	<1	1.49
Acad Self	<1	1.13	<1	3.30
Control Succ	<1	<1	15.52^{+}	<1
Control Fail	<1	<1	8.12^{+}	1.72
Att Sch	<1	<1	<1	<1
Peer Att Sch	1.57	4.84	6.64	1.61
GPA	4.11	1.48	1.84	10.80^{-}
Unex Abs	<1	<1	<1	1.54
Non-drug Prob	1.40	3.34	6.26	4.25
Drug Prob	3.00	<1	<1	1.00
General Drug Att	<1	<1	<1	1.01
Alc Benefits	<1	<1	1.66	9.07^{-}
Pot Benefits	<1	<1	3.87	6.00
Alc Costs	<1	<1	1.12	8.26^{-}
Pot Costs	3.28	<1	1.13	3.34
Soft Att	1.12	<1	4.04	<1
Knowledge	<1	4.87	<1	<1
Soft Peer Att	1.58	<1	<1	2.03
Soft Peer Use	<1	5.52	<1	<1
Alc Involve	3.22	1.97	<1	9.57^{-}

Table 6 (continued)

Measure	Grade 8 Male	Grade 8 Female	Grade 9 Male	Grade 9 Female
Cig Involve	<1	<1	2.12	<1
Pot Involve	<1	<1	1.89	1.75
Pill Benefits	<1	1.36	3.22	3.70
Pill Costs	2.02	2.41	4.73	2.59
Hard Peer Att	1.40	<1	<1	<1
Hard Peer Use	<1	<1	1.05	<1
Hard Att	2.13	<1	12.39+	<1
Inhalant Involve	<1	<1	<1	<1
Barbiturate Involve	<1	<1	1.48	1.41
Amphetamine Involve	<1	<1	<1	2.00
Cocaine Involve	1.61	1.78	1.62	<1
PCP Involve	1.01	<1	3.08	<1
LSD Involve	<1	3.10	5.50	<1
Heroin Involve	<1	2.92	4.01	<1

NOTE: The values tabled are the F-ratios for the treatment condition effect. The degrees of freedom for the error term are 126-163 for grade 8 males, 119-156 for grade 8 females, 151-201 for grade 9 males, 148-200 for grade 9 females.

- = Significant negative effect ($p < .01$)

+ = Significant positive effect ($p < .01$)

The results showed no obvious pattern. There were no significant treatment differences in 132 of the 140 analyses, four positive treatment effects, and four negative effects. The positive effects were confined to grade 9 males, and the negative effects were confined to grade 9 females. The expected pattern, that positive treatment effects would occur primarily for school-related measures, was obtained only for the grade 9 males.

Relation of Student Outcomes to Treatment Exposure

Student data from the experimental school were analyzed to determine whether student posttest changes were related to amount of exposure to ECM-trained teachers (Treatment Expos). We assumed that a monotonic function describes the relationship between Treatment Expos and the pretest-adjusted posttest measures.

Treatment Expos was trichotomized. Students in the bottom third of the distribution had 0-6 ECM-trained teachers (M = 4.68), the middle third had 7-9 ECM teachers (M = 8.01), and the upper third had 10-16 ECM teachers (M = 11.27). The trichotomized Treatment Expos was coded into two orthogonal components: linear and quadratic. Each posttest measure was regressed in a step-wise procedure on its corresponding pretest and on the two Treatment Expos components. These analyses were performed separately on each grade-sex group of students in the treatment school.

Either a significant linear Treatment Expos component by itself or significant linear and quadratic components together could be interpreted as a treatment effect. If the quadratic component were significant and the linear component were not, a treatment effect would not be implied because the relation would not be monotonic.

In none of the 140 regressions was the linear component of Treatment Expos significant. In one instance the quadratic component was significant. Thus, there was no evidence that student posttest changes were monotonically related to the amount of exposure to ECM-trained teachers.

Discussion

One of the three hypothesized effects of ECM on teacher outcomes was obtained. The predicted positive effect on satisfaction with teaching was significant for participants but not for all experimental teachers. Effects were not obtained on faculty cohesiveness or effectiveness at achieving ECM objectives.

ECM did not appear to affect student outcomes. No hypothesized effects were found for 8th grade students or 9th grade females. Hypothesized effects were obtained for 9th grade males on perceptions of the teaching climate and locus of control; however, these effects did not form an interpretable pattern. Furthermore, experimental student outcomes were not systematically related to exposure to ECM-trained teachers.

The present study employed a nonequivalent control group design; however, there was little evidence for initial nonequivalence. It seems unlikely that the lack of positive effects was due simply to a weak design. More plausible explanations might be failure of teachers to implement the ECM strategy or failure of the ECM strategy itself. To the extent that our process evaluation supports implementation failure, the effectiveness of the strategy itself remains an open question. Nevertheless, implementation levels are an index of the practical utility of the program, and as such, are informative.

Classroom implementation of the ECM skills in both the present and previous study (Schaps et al., Note 4) was highly disappointing. This was

true despite several changes in the training for the second year. It appears undeniable that the substance of ECM was either too subtle, not useful, or difficult to put into practice in the classroom (see Moskowitz, Malvin, Schaeffer, Schaps and Condon for a discussion of classroom opportunities for skill application, Note 12). Therefore, ECM may not be an effective prevention strategy unless means are devised to improve teacher implementation. Even so, such means are likely to be extraordinary or not generally replicable.

We are intrigued by the positive treatment effect on participants' satisfaction with teaching. This finding was not obtained in the prior evaluation of ECM. One reason for this may be that discipline skills were substituted for problem-solving skills in the second version of ECM. Since maintaining order in the classroom was rated by teachers as very to extremely important, we speculate that providing them specific discipline techniques enhanced their feelings of control over classroom events. While it is important not to ascribe undue significance to this finding, certain aspects of ECM may hold promise for the development of prevention approaches that improve the environment for teachers. Insofar as teachers are the agents of change for most school-based prevention programs, this would seem a worthwhile endeavor by virtue of its ramifications for students.

In sum, ECM failed to produce the hypothesized pattern of findings. However, teachers who took the training were found to be more satisfied with teaching at the posttest than the control teachers. The present study will continue for an additional year.

Reference Notes

1. Michigan Department of Education & The Office of Substance Abuse Services, Department of Public Health. 1976-77 Evaluation Report: Substance Abuse Prevention Education Program, undated.

2. Georgia Department of Human Resources & Georgia State Department of Education. Life Skills for Mental Health, 1977.

3. Bandt, P., Hammond, M., Wisdo, T. & Mitzel, H. A Follow-up Study of Teachers Trained in Affective Classroom Approaches to Primary Prevention of Drug and Alcohol Abuse. State College, PA: Addictions Prevention Laboratory, 1976.

4. Schaps, E., Moskowitz, J., Condon, J., Malvin, J. & Schaeffer, G. A Process and Outcome Evaluation of an Affective In-Service Training Program for Junior High School Teachers. Prevention Branch, National Institute on Drug Abuse, 1981.

5. Adams, S., Slimmon, L. & Schaps, E. Effective Classroom Management II--Junior High Documentation--Year 02. Prevention Branch, National Institute on Drug Abuse, 1980.

6. Stenner, A. & Katzenmeyer, W. Technical Manual and User's Guide: Self-Observation Scales, NTS Research Corporation, Durham, ND: undated.

7. Moskowitz, J., Schaeffer, G., Condon, J., Schaps, E. & Malvin, J. Psychometric Properties of the "Drug and Alcohol Survey." Prevention Branch, National Institute on Drug Abuse, 1981.

8. Moskowitz, J., Condon, J., Brewer, M., Schaps, E. & Malvin, J. The Napa Project: Scaling of Student Self-Report Instruments. Prevention Branch, National Institute on Drug Abuse, 1979.

9. Instructional Objectives Exchange. *Measures of Self Concept K-12* (rev. ed.) Los Angeles: Instructional Objectives Exchange, 1972b.

10. Instructional Objectives Exchange. *Attitude Toward School K-12* (rev. ed.) Los Angeles: Instructional Objectives Exchange, 1972a.

11. Kaufman, M., Semmel, M. & Agard, J. *Supplemental Materials to Year I Interim Report, Part II.* Washington, D.C.: U.S. Office of Education, Project Prime, undated.

12. Moskowitz, J., Malvin, J., Schaeffer, G., Schaps E. & Condon, J. The Effects of a Classroom Management Teacher Training Primary Prevention Program on Fifth-Grade Students. Prevention Branch, National Institute on Drug Abuse, 1981.

REFERENCES

Ascione, F. & Borg, W. Effects of a training program on teacher behavior and handicapped children's self-concepts. *Journal of Psychology*, 1980, *104*, 53-56.

Baskin, E. & Hess, R. Does affective education work? A review of seven programs. *Journal of School Psychology*, 1980, *18*, 40-50.

Cook, T. & Campbell, D. *Quasi-Experimentation: Design and Analysis Issues for Field Settings*. Chicago: Rand McNally, 1979.

Crandall, V., Katkovsky, W. & Crandall, V. Children's belief in their own control of reinforcements in intellectual-academic achievement situations. *Child Development*, 1965, *36*, 91-109.

Halpin, A. & Croft, D. *The Organizational Climate of Schools*. Chicago: Midwest Administration Center, University of Chicago, 1963.

Reichardt, C. The Statistical Analysis of Data from Nonequivalent Group Designs. In Cook, T. and Campbell, D. (Eds.), *Quasi-Experimentation: Design and Analysis Issues for Field Settings*. Chicago: Rand McNally, 1979.

Rempel, A. & Bentley, R. The measurement of teacher morale: a factor analysis approach. *Educational and Psychological Measurement*, 1964, *24*, 631-643.

Schaps, E., DiBartolo, R., Moskowitz, J., Palley, C. & Churgin, S. A review of 127 prevention program evaluations, *Journal of Drug Issues*, 1981, *11*, 17-44.