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ABSTRACT

The study investigated whether a consultant-driven prereferral intervention (Mainstream Assistance Teams) may be shortened in duration, thus improving its efficiency, without reducing its effectiveness. Subjects were 60 general educators, their 60 most difficult-to-teach nonhandicapped pupils, and 22 consultants, representing 17 elementary schools in a large metropolitan school system. The teachers were assigned randomly to a short (N=24) or long (N=24) version of the prereferral intervention or to a control group (N=12). Analyses indicated that the two variants of the prereferral intervention improved teacher perceptions of their difficult-to-teach students, and decreased referrals for testing and possible special education placement. Moreover, results suggested that the short and long versions were equally effective. Implications for consultation-related activity are discussed. Contains 21 references. (Author)

Mainstream Assistance Teams: A Scientific Basis for the Art of Consultation

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Running head: MAINSTREAM ASSISTANCE TEAMS

Abstract

The purpose of this investigation was to determine whether a consultant-driven prereferral intervention may be shortened in duration, thereby improving its efficiency, without reducing its effectiveness. Subjects were 60 general educators, their 60 most difficult-to-teach nonhandicapped pupils, and 22 consultants, representing 17 elementary schools in a large metropolitan school system. The teachers were assigned randomly to a short (n = 24) and long version (n = 24) of the prereferral intervention and to a control group (n = 12). Analyses indicated that the two variants of the prereferral intervention improved teacher perceptions of their difficult-to-teach students, and decreased referrals for testing and possible special education placement. Moreover, results suggested that the short and long versions were equally effective. Implications for consultation-related activity are discussed.

Mainstream Assistance Teams: A Scientific Basis for the Art of Consultation

Prereferral intervention refers to a teacher's modification of instruction or classroom management to better accommodate a difficult-to-teach (DTT) nonhandicapped pupil. Currently, prereferral intervention is much discussed for several reasons. First, if successful, it should reduce the number of invalid special education placements. Second, it is a means of curtailing school testing, which many regard as plagued by technically inadequate instrumentation (e.g., Coles, 1978), biased against minority students (e.g., Cummins, 1989), and too costly (Shepard, 1989).

Yet another reason for its popularity relates to process. Prereferral intervention is often embedded in a collaborative nexus, involving the teacher and specialists who work as co-equals "to generate creative solutions to mutually defined problems" (Idol, Paolucci-Whitcomb, & Nevin, 1986, p. 1). Its typical multidisciplinary nature, combined with convivial, egalitarian, and creative overtones, appeals to special educators eager to form partnerships with general educators. Such alliances represent a bridge to mainstream education, and an important modification of a service delivery model that, to many, has become increasingly balkanized and ineffective.

In 1985-1986 we joined forces with a metropolitan school district to implement prereferral interventions in four inner-city middle schools. We helped organize multidisciplinary building-based teams, calling them "Mainstream Assistance Teams" (MATs), and trained them in Behavioral Consultation (BC), a well-known form of collaborative problem solving. Despite the training and our on-site support, many MATs failed to design or execute effective interventions (see Fuchs & Fuchs, 1989). Moreover, teachers

complained that the give-and-take nature of BC took too long. In 1986-1987, in search of greater effectiveness and efficiency, we reduced MAT membership to a consultant and consultee and, more important, participants were presented with a short list of empirically validated and carefully detailed interventions from which they were required to choose. Thus, we sacrificed some consultant-consultee collaboration to help ensure accurate implementation of judiciously chosen interventions.

This more prescriptive approach was conducted in five middle schools in the same district as the year before. A multi-method, multi-person evaluation indicated it strengthened the fidelity with which MAT interventions were implemented and their effectiveness (see Fuchs, Fuchs, Bahr, Fernstrom, & Stecker, in press). Yet, problems remained. Teachers claimed improved behavior did not generalize, prescribed treatments were too complex, and the interventions still demanded too much time. In 1987-1988 we again modified MAT activity, and designed an experiment that simultaneously explored the efficacy of (a) several generalization strategies, (b) student-directed versus teacher-directed MAT interventions, and (c) interventions of shorter ar longer duration. This article reports on the last of these dimensions. Because of the well-known relation between efficiency and teacher acceptability of interventions (e.g., Reimers, Wacker, & Koeppl, 1987), we believe this dimension is important. Development of a consultation process that is economical as well as effective can only increase the frequency with which special educators, school psychologists, and classroom teachers undertake prereferral intervention.

Method

Setting

This experiment took place in the same metropolitan school system in

which prior MAT activity had been conducted, one that recently had adopted a district-wide testing policy and more stringent standards for grade promotion. These standards resulted in more frequent student retentions, which, in turn, prompted many teachers to ask for help with DTT nonhandicapped children. Concerned about such requests as well as by increasingly large enrollments in special education, the district's Director of Pupil Personnel requested large-scale MAT implementation during the 1987-1988 school year. He identified the district's 23 elementary guidance counselors, each located in a different building, as consultants. Because of our interest in departmentalized schools, including grades 3, 4, 5, or 6, we eliminated five schools from the Director's list. The principal of another building refused to participate, leaving us with 17, or 26% of all elementary schools in the district. This subgroup was representative in terms of size, location (inner-city vs. suburban), and proportion of students receiving free lunch.

Participants

Consultants. School-based consultants were 17 guidance counselors. Their mean age was 37 years; 16 were female and three were Black. All but one had a master's degree and, on average, they had 14 years of professional experience, most of which was as elementary school teachers. Although only seven had one or more classes in consultation, they reported that 27.18% of their worktime was spent in consultation. Shortly after project start-up, one counselor dropped out, but her school remained in the study.

Six graduate students in special education, referred to as "research assistants" (RAs), also served as consultants. They were assigned from 2 to 4 schools. In addition to conducting consultation, they were trained to provide technical assistance to the counselors. They attempted to ensure that counselors understood the consultation process and the prescribed classroom

interventions, had all necessary project materials, and proceeded with consultation in timely fashion.

Project teachers. Mainstream classroom teachers were assigned randomly to one of three roles: experimental teachers, in whose classes the MAT project initially was implemented; transfer teachers, whose classrooms became the site of MAT transfer or generalization activity; or control teachers. No teacher served in more than one role, and all were recruited by the school-based consultants. The consultants were asked to recruit every possible teacher in grades 3, 4, 5, or 6 who exchanged pupils for academic subjects. Further, they were responsible for making clear to the teachers that they first would have to agree to participate and only later learn whether they would be experimentals, transfers, or controls. All teachers and consultants were promised a small cash stipend in return for their participation.

Consultants recruited 92 teachers, 48, 32, and 12 of whom were assigned randomly to experimental, transfer, and control conditions, respectively. Among the experimental teachers intially selected, three were eliminated after the consultants described them as individuals with whom they could not get along. Two others experienced a change-of-heart and dropped from the project. These developments necessitated randomized replacements from the pool of teachers who initially did not volunteer to participate. All teachers designated transfers or controls consented to their assigned roles. Because this article does not address generalization, the transfer teachers will not be described further.

The 16 counselors worked with 28 experimental teachers; 12 consulted with two each, while four worked with one teacher. The six RAs were paired with 20 additional experimental teachers. Between two and five teachers were assigned to each RA, with a median and mode of three teachers each. On average, the 60

experimental and control teachers had taught 15.62 years (SD = 8.26), and had 24.93 pupils (SD = 2.69); 37 (62%) and 23 (38%) of the teachers were Caucasian and Black, respectively; and 54 (90%) were female.

Difficult-to-teach students. Experimental and control teachers identified their single most DTT nonhandicapped student. It was emphasized to teachers that MAT interventions were designed specifically for two types of students: Those whose behavior frequently disturbs the teacher and classmates and/or those whose behavior seriously interferes with their own work productivity. Regarding this second type, teachers were asked to select only students with "performance," not "competence," problems; that is, those whose academic skills were near-grade level, but who performed very poorly.

Of 60 experimental and control DTT students, 42 (70%) were boys and 31 (51.70%) were Caucasian. Their mean age was 10.13 years (SD = 1.16), with 24 (40%), 21 (35%), 8 (13%), and 7 (12%) in grades 3, 4, 5, and 6, respectively. On the Stanford Achievement Test, administered system-wide by the district just before project start-up, they earned a mean normal curve equivalent of 41.70 (SD = 15.00) in reading and 44.42 (SD = 17.43) in math. Twenty-three (38%) had been retained at least once.

Consultation Process

Behavioral Consultation. MAT prereferral interventions were embedded in BC, which is conducted within a series of four stages. Major objectives of the first stage, problem identification, are to define the problem, or "target," behavior in observable terms and obtain a reliable estimate of its frequency, intensity, or duration. In the next stage, problem analysis, the goal is to validate the existence of a problem, identify instructional and student variables that may contribute to a solution, and collaboratively develop an appropriate plan. During plan implementation, the third stage, the

consultant monitors implementation of the intervention and provides corrective feedback, helping to ensure that it is delivered as designed. The goal of the final stage, problem evaluation, is for consultant and teacher to evaluate the effectiveness of the intervention and, if it has proved ineffective, to determine necessary modifications. Prior component analyses of BC have suggested that all four stages may be critical to improved student behavior and academic performance (see Fuchs & Fuchs, 1989; Fuchs, Fuchs, Bahr, Fernstrom, & Stecker, in press).

Written scripts. All but one stage (i.e., plan implementation) usually is conducted during formal interviews or meetings. Inspired by the Cantrell's Heuristic Report Form (see Cantrell & Cantrell, 1980), we recast descriptions by Bergan (1977) and Witt and Elliott (1983) of the substance covered in these formal meetings into written scripts (see Fuchs, Fuchs, Reeder, et al., 1989), which guided the consultants' verbal behavior. Our expectation was that scripts would help consultants (a) create a rationale and overview for the meetings; (b) establish and maintain a logical and quick-paced "flow"; (c) obtain descriptions of the classroom environment, evaluations of targeted students, and important logistical information; and (d) systematically check the accuracy of key information. To strengthen the consultants' adherence to the BC process, the six RAs were instructed to encourage the guidance counselors to follow the scripts closely and to record the degree of accuracy with which scripts were used. Consultants associated with the long version of prereferral intervention had different scripts than those in the short version.

Teacher-Student Contract

A teacher-student contract was selected as an intervention component for several reasons. First, recent surveys (e.g., Martens, Peterson, Witt, &

Cirone, 1986) indicate many classroom teachers view it positively. Second, considerable research has demonstrated that a salient feature, the setting of specific challenging goals, positively affects student performance (e.g., Locke, Shaw, Saari, & Latham, 1981). Third, prior research on MAT participants' use of contracts indicates its effectiveness (see Fuchs, Fuchs, Bahr, Fernstrom, & Stecker, in press).

The contract stipulates six dimensions of treatment: (a) the type and degree of desired change in the target behavior; (b) the classroom activity to which the contract applies; (c) the strategy by which the target behavior will be monitored; (d) the nature of the reward; (e) when and by whom it is delivered; and (f) whether the contract can be renegotiated (see Fuchs, in press, for an example of the contract). Consultants encouraged teachers to base selection of the reward on student interest and to provide it as soon as possible following demonstration of desired behavior. Each contract applied for only one day.

Student-Self Monitoring

Many teachers do not systematically monitor student performance, nor use it as a basis for determining whether conditions of a contract have been fulfilled (see Fuchs & Fuchs, 1989). Borrowing from others' work (e.g., Broden, Hall, & Mitts, 1971; Sagotsky, Patterson, & Lepper, 1978), and mindful of the teacher-identified DTT pupils with whom we had worked previously, we developed two monitoring procedures and encouraged teachers to use one with the contract. Depending on the nature of the student's target behavior, monitoring involved either product inspection or interval recording.

Product inspection and interval recording. Product inspection is defined as "evaluation of academic work at the end of a predetermined duration." It is used for behaviors primarily interfering with the student's academic work

(e.g., inattentiveness). Interval monitoring denotes a technique to "record whether a behavior does or does not occur during a predetermined period or interval." It was designed for behavior that is primarily disruptive to the teacher's or classmates' work or well-being (e.g., disturbing noise).

Monitoring phases. Product inspection and interval monitoring were implemented in six phases. The first two were complex; successive phases became more and more simple. The purpose of this progressive simplification, or "fading," is to reduce monitoring responsibility so that it becomes increasingly feasible in the initial setting and transfer classrooms.

To ensure understanding of procedures, teachers monitored in Phase 1. Students self-monitored in remaining phases. The most complex phases 1 and 2 subsumed the following activities. The teacher first set a daily goal (e.g., "John will complete 90% of his in-class math assignment with a minimum 75% correct). Second, the student self-monitored for a pre-specified time, and then recorded and charted performance. Third, using these data, the student and teacher collaboratively decided on a summary or global rating of "1" (poor) to "4" (excellent). Next, the student wrote a "self-talk question," reflecting the nature of the target behavior (e.g., "Did I do good work in math today?"), and wrote an answer pegged to the global rating. A rating of "1" dictated an answer like, "No, I did not do good math work today. I'll do better tomorrow." A rating of "4" deserved an answer like, "I did great math work today!" Finally, if the rating was a "3" or "4," the teacher rewarded the student in accordance with the contract. (For more information on product inspection monitoring, see Fuchs, Fuchs, Bahr, et al., in press; for a complete description of interval recording, see Fuchs, Fuchs, Gilman, et al., 1990).

Unlike the first four phases, phase 5 and 6 were conducted concurrently.

Phase 5 was the last and most streamlined version of self-monitoring in the initial classroom; phase 6 indicated that phase 5 monitoring was occurring simultaneously in a transfer setting.

Long vs. short conditions. Whereas teachers always monitored twice in Phase 1, the number of times students self-monitored in Phases 2 through 6 depended on whether they were in the short or long group. In the short condition, students monitored in each phase for 5 days or until the daily goal was achieved three times, whichever came first. Pupils in the long condition self-monitored in each phase for 6 days or until the daily goal was met four times. The range in total number of monitoring sessions was 14 to 22 in the short condition; 18 to 28 in the long version. (Implementations of monitoring during Phase 5 and concurrent implementations in Phase 6 were counted once because, at this stage, a student received a reward only when behavior was judged satisfactory in both initial and transfer classrooms.)

Training and Assignment to Long and Short Conditions

Training. In two 7-hour sessions, the 16 school-based consultants were trained: (a) in the 4-stage process of BC; (b) to use the written scripts; (c) to use the teacher-student contracts and to facilitate teacher selection of functionally effective rewards; and (d) to ensure teachers' correct use of product inspection or interval recording and how to explain to teachers the fading of the monitoring procedures. Finally, using videotapes of actual classroom conflict, consultants were trained to employ a systematic observation procedure reliably (see below).

Assignment to long and short conditions. At the end of the second training session, teachers were assigned at random to experimental and control roles. The 48 experimental teachers then were assigned randomly to long and short conditions. Finally, the experimental teachers were assigned randomly

to school-based and RA consultants so that each consultant with more than one teacher was associated with both long and short conditions. Table 1 displays an index of the teachers' prestudy attitude toward MAT interventions and their class sizes, years of professional experience, race, and gender by long, short, and control conditions. No reliable differences were identified. Table 1 also provides demographic and academic performance data for the DTT students in the three groups. No significant differences were found.

Insert Table 1 about here

Measures

Fidelity of treatment. Project staff analyzed DTT students' product inspection or interval recording monitoring forms and rated each set on: (a) total number of monitoring sessions initiated and number initiated during Phases 2 through 6; (b) percentage of forms completed; (c) percentage of monitoring forms completed with 100% accuracy; and (d) percentage of components of monitoring forms completed accurately, a less rigorous index of "c." Across these dimensions interrater agreement ranged from .75 to .94.

Severity, manageability, and tolerability of target behavior. Using a 5-point Likert-type continuum, teachers rated DTT students' target behavior in terms of severity (1 = severe, 5 = mild), manageability (1 = unmanageable, 5 = easily managed), and tolerability (1 = intolerable, 5 = very tolerable). Experimental teachers provided ratings prior to and immediately following intervention. Control teachers' pre- and postratings were obtained at the same time. In prior research (Fuchs & Fuchs, 1989), the internal consistency (Cronbach's alpha) of these ratings at pre- and postintervention has been .93 and .92, respectively.

Revised Behavior Problem Checklist (RBPC). The RBPC (Quay & Peterson, '83) was completed by experimental and control teachers on their DTT pupils prior to and immediately following intervention in the initial classrooms. The RBPC contains 89 items, 77 of which constitute six independent scales: Conduct Disorders, Socialized Aggression; Attention Problems; Anxiety Withdrawl; Psychotic Behavior; and Motor Tension-Excess. Reliability and validity of the RBPC appear comparable to or better than those of most behavior rating scales (Eliason & Richman, 1988).

Observations. School-based and RA consultants were instructed by audiotape to observe the DTT student and two randomly selected same-sex peers on a rotating basis for 2-minute intervals. This was true for the project staff member responsible for observations in control teachers' classes. Each 2-minute interval was divided into 10-second blocks for observing (8 seconds) and recording (2-seconds). Students were observed during 20-minute sessions, twice preceding intervention and two times immediately after completion. Three weeks following post-intervention observations, one follow-up observation was completed for each experimental and control DTT student. Observations focused only on DTT pupils' target behavior.

Following 3 hours of training with interval recording, school-based and RA consultants demonstrated interrater agreement of .82 and .92, respectively (number of agreements divided by agreements plus disagreements on an interval-by-interval basis). One of two "blind" observers was matched with consultants for 14% of all pre-intervention and follow-up observations. Mean interrater agreement across both times was .95 (range = .85 to 1.00). A very similar procedure was used to obtain interrater agreement in control classes. Across pre-intervention and follow-up observations, mean agreement was .96 (range = .92 to .98).

Teacher and student questionnaires. Following intervention the RAs administered questionnaires individually to teachers and students in long and short conditions. Items explored respondents' views on project effectiveness, the relative importance of facets of the intervention, degree of difficulty associated with implementing the interventions, etc. Each item was rated on a 5-point Likert-type scale.

Special education referrals. At the end of the school year, experimental and control teachers were contacted by phone and asked whether their DTT student had been referred for testing and possible special education placement. Teacher responses were recorded as "yes" or "no."

Results

A series of preliminary analyses was conducted to explore whether type of consultant (school-based vs. RA) exerted any systematic effect. In each analysis, the consultant factor was not significant. Thus, it was eliminated from subsequent analyses.

Fidelity of Prereferral Interventions

Type of monitoring: product inspection vs. interval recording. Among experimental teachers, 27 (56.25%) and 21 (43.75%) used product inspection and interval recording, respectively. Half of the 24 long-group teachers used product inspection, half used interval recording; 15 and 9 short-group teachers used product inspection and interval recording, respectively. Use of one or the other monitoring type was not related to the long- vs. short-group versions of MAT, $\chi^2(1, N = 48) = .56$.

Number of monitoring sessions. Means in Table 2 suggest that teachers and students complied with the request that contracts and monitoring should be implemented 4 to 6 times (long) or 3 to 5 times (short) in Phases 2 through 6. Across the five phases, the average number of implementations for long and

short groups was 23.93 and 18.13, respectively. A one between (groups) one within (phases) ANOVA indicated a significant main effect for group; the long vs. short disparity was significant, F (1, 26) = 38.75, $p < .001$.

Insert Table 2 about here

Completeness and accuracy of monitoring. Data in Table 2 also indicate that, irrespective of treatment group and phase, teachers and students completed monitoring tasks in a thorough manner, with a relatively high degree of accuracy. A one between (groups) two within (phases and three indices of completeness/accuracy) ANOVA indicated comparability for group, F (1, 26) = .18; for group x completeness/accuracy, F (2, 52) = .21; and for group x phase x completeness/accuracy, F (8, 208) = .40.

Frequency of Goal Attainment

On average, pupils in long and short groups achieved their daily contract-related goals during a majority of monitoring sessions. Across the six phases, the average percentage of goals met by long group members ranged from 65 (Phases 1 and 2) to 83 (Phases 3 and 5); for the short group, 67 (Phase 1) to 92 (Phase 6). On average, long and short groups met 75% and 78% of their contractual goals, respectively. A one between (groups) one within (phases) ANOVA indicated comparability for group, F (1, 23) = .25, and for the group x phase interaction, F (5, 115) = 1.32.

Teacher Ratings

Severity, manageability, and tolerability of target behavior. Mean pre- and postintervention teacher ratings, respectively, were 6.08 (SD = 2.19) and 10.04 (SD = 2.63) for the long group; 5.63 (SD = 1.74) and 10.46 (SD = 2.86) for the short group; and 6.83 (SD = 2.48) and 7.50 (SD = 3.15) for controls.

A one between (long vs. short vs. controls) one within (trials) ANOVA revealed a significant group x trial interaction, F (2, 57) = 8.02, $p < .001$. Scheffe analysis showed that changes between pre- and postintervention for the long (M = 3.96, SD = 3.30) and short groups (M = 4.83, SD = 2.90) were reliably greater than for controls (M = .67, SD = 2.39). Long and short groups were comparable.

Revised Behavior Problem Checklist. Means and standard deviations for the RBPC are displayed in Table 3. A one between (group) two within (trials and RBPC scales) ANOVA produced a significant three-way interaction, F (1, 285) = 2.25, $p < .05$. One-way ANOVAs on the pre- minus postintervention ratings for each RBPC scale revealed significant group differences for Attention Problems, F (2, 57) = 4.46, $p < .05$, and for Anxiety-Withdrawl, F (2, 57) = 3.96, $p < .05$. For Attention Problems, Scheffe anlaysis indicated that ratings of short-group teachers became reliably more positive from pre- to postintervention (M = -4.04, SD = 7.06) than did those of controls (M = .75, SD = 5.48). For Anxiety-Withdrawl, there was a similar difference: short (M = -1.92, SD = 3.66) vs. control (M = .83, SD = 1.64). Pre- to postratings did not reliably distinguish pupils in the long group from controls.

Insert Table 3 about here

Observations

Table 4 displays descriptive data for DTT pupils' target behavior. On average, DTT students in long and short groups dramatically reduced their behavior across time, to the point that there was virtually no difference at "post" and "follow-up" between their mean percentages and those of their peers. At the same time, however, DTT controls also evidenced a noticeable

decrement in behavior. A one between (group) two within (trial and student) ANOVA produced a nonsignificant group x trial x student (DTT vs. peer) interaction, F (4, 114) = 1.10. A similar result was obtained when DTT students' behavior was divided by peers' behavior, F (4, 114) = 1.20.

Insert Table 4 about here

Teacher and Student Questionnaire

Table 5 displays means and standard deviations of teacher and student responses during structured interviews. Irrespective of group membership, respondents expressed generally positive views about the difficulty of the intervention activity, clarity of instructions and materials, independence with which students participated, and the project's overall effectiveness and worth. A two between (group and respondent) one within (question) ANOVA failed to produce a significant main effect for group, F (1, 92) = .00, nor any significant interactions: group x respondent, F (1, 92) = 1.31; group x question, F (6, 552) = .42; and group x respondent x question, F (6, 552) = .35.

Insert Table 5 about here

There was, however, a significant main effect for respondent, F (1, 92) = 23.96, $p < .001$, indicating that across group membership and question type, student ratings were more positive than teacher ratings. Relatedly, there was a significant respondent x question interaction, F (6, 552) = 4.80, $p < .001$. Scheffe analysis revealed that teacher-student difference was greatest on the question of whether transfer of pupil behavior was effective. In addition,

their views diverged more with respect to intervention effectiveness and difficulty than they did about the clarity of instructions and materials and the degree to which students independently directed intervention activity.

Referrals to Special Education

Of 24 students in the long and short groups, respectively, 3 (13%) and 2 (8%) were referred to special education at the end of the school year. Among 12 control pupils, 6 (50%) were referred to special education. Chi square analysis, using a three (group) by two (referred/not referred) contingency table, revealed a significant relation between group membership and referral status, $\chi^2(2, N = 36) = 10.19, p < .01$.

Discussion

Findings indicate that MAT teachers were significantly less likely to refer DTT pupils to special education than were control teachers. Their pre- to postratings of the severity, manageability, and tolerability of students' target behavior became more positive than control teachers' ratings. In addition, on two scales of the RBPC, short-group teachers exhibited a significantly positive shift from pre- to postintervention in comparison to controls. On the other hand, whereas MAT pupils' target behavior decreased in frequency to the same level of their peers, control students also reduced their problem behavior, with a result that pre- to postobservation comparisons between the groups were not significant. On balance, however, the data indicate that, like in 1986-1987, MATs accomplished their mission.

Results also suggest the short version of MAT was at least as effective as the long. The two groups' pre- to postintervention changes were similar for teachers' severity, manageability, and tolerability ratings and for students' observed classroom behavior. There also were no between-group differences with regard to responses on the questionnaire and rates of teacher

referral. On the Attention Problems and Anxiety-Withdrawl scales of the RBPC, short-group teachers reported greater pre- to postintervention improvement for their students than did long-group teachers.

Demonstration of the overall comparability of short and long versions may not be revolutionary, especially given our conservative operationalization of "short" (i.e., 14 to 22 days versus 18 to 28 days). Nevertheless, it represents a brick in the proverbial wall; an additional step toward construction of an effective, feasible prereferral intervention. Together with efforts to make MAT interventions suitable for students to conduct themselves, and to facilitate transfer of improved behavior across classrooms, we are developing a packaged approach to consultation-related innovation and change.

By "packaged," we mean a multifaceted intervention that has been preassembled through efforts (a) to validate empirically each constitutent part and (b) to describe these parts, and their interrelations, with sufficient clarity so practitioners may replicate them. In this sense, the packaged approach is an embodiment of the scientific enterprise; logical-analytic methods producing hard-won knowledge of rules, formulas, and algorithms. And yet, this technology, so-to-speak, is not meant to replace the intuition, creativity, and improvisation of teachers and consultants. These professionals work in complex environments, and we readily acknowledge that to be effective in these surrounds, one needs more than technology; one also requires artistry — the artistry that enters into knowing when to follow the implications of the laws, generalizations, and trends revealed by science, and when not to, and how to go beyond scientific fact by combining two or more laws in solving a problem. But to acknowledge the importance of such artistry is not to belittle the need for science; one depends on the other. (Hence,

the meaning of the tag in the colonic title of this article.) Josiah Royce described this interdependence well with respect to teaching when he wrote that,

> it is vain that the inadequacy of science is made a sufficient excuse for knowing nothing of it. The more inadequate science is when alone, the more need of using it as a beginning when we set about our task .... Instinct needs science, not as a substitute, but as a partial support .... [W]hen you teach, you must know when to forget formulas; but you must have learned them in order to be able to forget them (Royce, 1891, in Gage, 1978, p. 20).

Effective consultation activity, like prereferral intervention, relies on a melding of art and science; the conjoining of school and university, clinician and researcher, interpretivist and logical positivist. The number and seriousness of problems besetting our public schools require such cooperation, and they demand it now.

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Table 1

Teacher and Student Characteristics by Treatment Group

Variable[a]	Long (n=24) M	(SD)	Short (n=24) M	(SD)	Control (n=12) M	(SD)	$\chi^2(2)$[b]	$F(2,57)$[b]
			Teacher					
Attitude	206.29	(16.87)	213.08	(21.17)	201.42	(19.91)		1.63
Black teachers (%)	42.00		38.00		33.00		.25	
Class size (pupils)	24.75	(2.67)	25.25	(3.04)	24.67	(2.02)		.28
Experience (yrs)	14.42	(8.94)	16.71	(7.58)	15.83	(8.53)		.46
Female teachers (%)	88.00		92.00		92.00		.28	
			Student					
Black students (%)	42.00		46.00		58.00		2.43[c]	
Chronological age (yrs)	10.21	(1.18)	10.17	(1.17)	9.92	(1.17)		.26
Female students (%)	21.00		38.00		33.00		1.67	
Ginn reading level							8.95[d]	
Grade 1 (%)	0.00		0.00		8.00			
Grade 2 (%)	17.00		8.00		25.00			
Grade 3 (%)	29.00		46.00		42.00			
Grade 4 (%)	29.00		29.00		8.00			
Grade 5 (%)	8.00		4.00		8.00			
Grade 6 (%)	17.00		13.00		8.00			
Grade placement							6.22[e]	
Grade 3 (%)	33.00		33.00		67.00			
Grade 4 (%)	38.00		42.00		17.00			
Grade 5 (%)	13.00		13.00		17.00			
Grade 6 (%)	17.00		13.00		0.00			

(table continues)

Table 1

Teacher and Student Characteristics by Treatment Group

Variable[a]	Long (n=24) M	(SD)	Short (n=24) M	(SD)	Control (n=12) M	(SD)	$\chi^2(2)$[b]	$F(2,57)$[b]
SAT math	46.79	(18.34)	45.26	(17.11)	38.02	(15.99)		1.06
SAT reading	43.88	(16.37)	42.57	(14.30)	35.58	(12.86)		1.31
Students retained (%)	25.00		42.00		58.00		3.95	

[a]Prior to the investigation, attitude toward the MAT interventions was explored by asking teachers to read three variations of a common student behavior problem. Each was followed by a description of a different classroom intervention. All three interventions resembled the contract and monitoring used in the study. The teachers then evaluated the interventions separately on an Intervention Rating Profile (IRP-15; Martens & Witt, 1982), which explores perceptions about an intervention's effectiveness and acceptability. The IRP-15 contains 15 questions, each of which is rated on a 6-point Likert-type scale (where 1 = strongly disagree and 6 = strongly agree). Thus, maximum (positive) and minimum (negative) scores are 90 (15 x 6) and 15 (15 x 1), respectively, per intervention; 270 (90 x 3) and 45 (15 x 3) are maximum and minimum scores across the three interventions. Ginn reading level is the level in the basal series at which students were reading prior to the investigation. SAT math and SAT reading refer to the normal curve equivalents on the Stanford Achievement Test, Form F. Students retained signifies the percentage of pupils retained one or more years.

[b]None of these values is statistically significant.

[c]4 degrees of freedom.

[d]10 degrees of freedom.

[e]6 degrees of freedom.

Table 2

Frequency, Completeness, and Accuracy of Monitoring Sessions by Intervention Phases and Long and Short Groups[a]

Variable	Phase 2 M	Phase 2 (SD)	Phase 3 M	Phase 3 (SD)	Phase 4 M	Phase 4 (SD)	Phase 5 M	Phase 5 (SD)	Phase 6 M	Phase 6 (SD)
					Long (n=13)					
No. of sessions	5.54	(.78)	5.08	(.95)	5.08	(.86)	4.15	(.56)	4.08	(.49)
Sessions completed (%)	.83	(.31)	.77	(.41)	.86	(.23)	.81	(.25)	.89	(.24)
Sessions completed perfectly (%)	.74	(.31)	.72	(.42)	.82	(.28)	.75	(.34)	.84	(.26)
Session components completed perfectly (%)	.95	(.06)	.96	(.09)	.96	(.07)	.95	(.09)	.96	(.07)
					Short (n=15)					
No. of sessions	4.13	(1.06)	3.07	(.96)	3.27	(1.16)	3.93	(.70)	3.73	(.59)
Sessions completed (%)	.90	(.18)	.85	(.28)	.93	(.18)	.82	(.36)	.83	(.32)
Sessions completed perfectly (%)	.84	(.21)	.81	(.29)	.84	(.25)	.72	(.41)	.82	(.32)
Session components completed perfectly	.98	(.03)	.95	(.09)	.96	(.06)	.95	(.07)	.95	(.09)

[a]Phase 1 was excluded from analyses because the consultant's classroom presence in this phase ensured teacher compliance and, therefore, ...cant variability. The data in this table are for only 28 teachers because 16 did not participate in the transfer aspect of the study (Phases 5 and 6), and, for 4 additional teachers, we had incomplete fidelity information.

Table 3

Teacher Responses on the Revised Behavior Problem Checklist by Treatment Group[a]

	Long (n=24)				Short (n=24)				Controls (n=12)			
	Pre		Post		Pre		Post		Pre		Post	
Scale[b]	M	(SD)	M	(SD)	M	(SD)	M	(SD)	M	(SD)	M	(SD)
CD	12.88	(10.82)	9.38	(9.05)	13.29	(10.24)	9.00	(8.51)	11.83	(10.24)	12.08	(8.63)
SA	4.29	(4.53)	2.63	(4.14)	3.13	(4.06)	3.54	(4.33)	2.58	(2.61)	2.75	(3.17)
AP	14.75	(5.80)	10.71	(6.66)	16.58	(5.03)	11.13	(5.68)	16.25	(6.62)	17.00	(5.27)
AW	4.13	(2.77)	3.63	(2.98)	5.17	(3.99)	3.25	(3.03)	5.92	(4.40)	6.75	(4.56)
PB	1.17	(1.71)	0.75	(1.07)	1.42	(1.89)	0.50	(0.78)	1.42	(1.56)	1.50	(1.68)
ME	3.46	(2.47)	3.04	(2.56)	3.67	(2.04)	2.75	(2.38)	4.50	(2.88)	3.83	(2.66)

[a]Lower scores are more positive than higher ones.

[b]CD = Conduct Disorders (22 items, maximum score = 44), SA = Socialized Aggression (17 items, maximum score = 34), AP = Attention Problems (16 items, maximum score = 32), AW = Anxiety Withdrawal (11 items, maximum score = 22), PB = Psychotic Behavior (6 items, maximum score = 12), ME = Motor Excess (5 items, maximum score = 10).

Table 4

Percent of Observed Intervals in which DTT Students and Peers Demonstrated Target Behavior by Treatment Group

	Long		Short		Controls	
	DTT (n=24)	Peers (n=48)	DTT (n=24)	Peers (n=48)	DTT (n=12)	Peers (n=24)
Trial	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Pre	.41 (.19)	.21 (.14)	.38 (.19)	.18 (.18)	.39 (.16)	.15 (.10)
Post	.21 (.19)	.23 (.18)	.17 (.18)	.20 (.18)	.31 (.21)	.17 (.11)
Follow-up	.17 (.20)	.20 (.17)	.24 (.23)	.24 (.25)	.26 (.20)	.16 (.11)

Table 5

Teacher and Student Responses to Questionnaire

Item	Long (n=24)				Short (n=24)			
	Teacher		Student		Teacher		Student	
	M	(SD)	M	(SD)	M	(SD)	M	(SD)
Were activities hard to do? (1=very hard, 5=not at all hard)	3.54	(.78)	4.65	(.71)	4.04	(.86)	4.50	(.78)
How clear were project instructions? (1=not clear, 5=very clear)	4.46	(.78)	4.54	(.59)	4.58	(.72)	4.42	(.78)
How clear were the materials? (1=not clear, 5=very clear)	4.33	(.76)	4.54	(.88)	4.46	(.78)	4.50	(.66)
Did the students perform independently? (1=not independent, 5=very independent)	3.50	(1.10)	3.96	(1.00)	3.67	(1.58)	3.88	(1.08)
Was the project effective? (1=not effective, 5=very effective)	3.54	(.88)	4.29	(.81)	3.38	(.88)	4.17	(1.20)
Was the transfer effective? (1=not effective, 5=very effective)	3.17	(1.01)	4.29	(1.16)	3.21	(1.06)	4.00	(1.41)
Was the project worth doing? (1=not at all, 5=definitely)	3.88	(1.08)	4.67	(.70)	3.92	(.83)	4.58	(.83)