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The Classroom Check-up: A Classwide Teacher Consultation Model for Increasing Praise and Decreasing Disruptive Behavior

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Abstract

School-based consultation typically focuses on individual student problems and on a small number of students rather than on changing the classroom system. The *Classroom Check-up* (CCU) was developed as a classwide consultation model to address the need for classroom level support while minimizing treatment integrity problems common to school-based consultation. The purpose of the study was to evaluate the effects of the CCU and Visual Performance Feedback on teacher and student behavior. Results indicated that implementation of the CCU plus Visual Performance Feedback increased teacher implementation of classroom management strategies, including increased use of praise, use of behavior specific praise, and decreased use of reprimands. Further, these changes in teacher behavior contributed to decreases in classroom disruptive behavior. The results are encouraging because they suggest that consultation at the classroom level can create meaningful teacher and student behavior change.

Classroom management is directly tied to levels of student involvement and academic achievement, making it an important component of teaching. Furthermore, a nationwide survey of teachers across all grade levels indicated that teachers feel a strong need for additional training and support in classroom management (Coalition for Psychology in Schools and Education, 2006). Effective classroom management can help to decrease disruptive classroom behaviors and increase student engagement in academic tasks. Further, poor classroom management has been linked to long-term negative academic, behavioral, and social outcomes for students (Kellam, Ling, Merisca, Brown, & Ialongo, 1998; National Research Council, 2002; Reinke & Herman, 2002). One potential method for supporting teacher implementation of effective classroom behavior management practices is through the use of school-based consultation.

Many models have been developed that encourage school psychologists to incorporate instructional consultation as a central focus of their roles (see Rosenfield, 1995; Ysseldyke, et al., 1997). For instance, Ysseldyke and Christenson (2002) created the Functional Assessment of Academic Behavior (FAAB), as a tool for consultants to assess the instructional setting and needs of individual students with learning problems. The FAAB includes multiple components (including teacher expectations, classroom environment, parent participation) for fostering student achievement and adaptation. Erchul & Martens (2002) also proposed a school consultation model for school psychologists which integrates elements of mental health and behavior consultation as well as literature from their own relational communication research. These modern models of instructional consultation share in common an emphasis on careful

assessment of instructional domains to guide intervention development, and they also situate the learner as part of the instructional system rather than as the primary source of the problem.

One limitation of existing models, however, is that most focus on individual students as targets of interventions rather than on changing the entire classroom ecology (Sheridan, Welch, & Orme 1996). This is true despite recent calls by applied researchers to assess and intervene in systems (e.g., classrooms, schools) rather than at the individual student level (Strein, Hoagwood, & Cohn, 2003). Public health approaches such as Schoolwide Positive Behavior Supports (Sugai, Horner, & Gresham, 2002) emphasize systems level change in promoting whole school wellness and preventing and reducing school problems. Targeting the classroom system to increase effective classroom management practices delivered to all students is more efficient than targeting individual students because it is likely to reduce current student behavioral and academic difficulties as well as prevent future student problems on a broader scale. Thus, classwide consultation can be a cost effective and useful tool for improving the classroom as well as individual student outcomes.

A host of literature has documented the critical features of effective classroom management that can benefit all students, not just those with identified behavior or learning problems, and thus can be used to guide classwide teacher assessment and intervention planning. These effective strategies include proactive classroom management (e.g., considerations of physical layout, teaching expectations, and providing consistent consequences) (Colvin, Kame'enui, & Sugai, 1993; Good & Brophy, 2003; Sprick, Sprick, & Garrison, 1992; Sugai, et al., 2002), and positive interaction between teachers and students (e.g., use of behavior-specific praise) (Brophy, 1983; Cameron & Pierce, 1994; Espin & Yell, 1994; Hall, Lund, & Jackson, 1968; Reinke, Lewis-Palmer, & Martin, 2007; Sutherland, Wheby & Copeland, 2000). These classroom management strategies have been linked to positive student outcomes, including increased student academic engagement and decreased disruptive behavior. Further, each of the classroom management strategies listed can be efficiently assessed within the classroom-wide context.

Despite this knowledge-base of effective classroom management strategies, transporting empirically-supported practices to real world implementation can be difficult. This is particularly salient to school-based consultation given the existing literature describing low fidelity of implementation of interventions (Noell, Witt, Gilbertson, Ranier, & Freeland, 1997; see Riley-Tillman, Chafouleas, Eckert, & Kelleher, 2005; Witt, Noell, LaFleur, & Mortenson, 1997). Although limited data has been collected to support the point, many researchers believe that interventions are often not implemented with integrity because they are infeasible (Odom, McConnell, & Chandler, 1993) or perceived by consultees as unacceptable; that is, as unfair, inappropriate, or unreasonable for a given problem (Gresham, 1991; Jenson, Hoagwood, & Trickett, 1999).

Performance feedback, providing ongoing data-based objective feedback on current performance of targeted behaviors, is among the most promising methods for increasing the implementation of evidence-based instructional practices (Jones, Wickstrom, & Friman, 1997; Noell, et al., 1997; Noell, et al., 2005; Reinke, et al., 2007). Numerous studies have documented the effectiveness of performance feedback on behavior change with teachers (Fuchs & Fuchs, 1993; Harchik, Sherman, Sheldon, & Strouse, 1992; Mortenson & Witt, 1998; Noell, et al., 2000; Witt, et al., 1997). For instance, Noell and colleagues (2005) investigated teacher implementation of treatment plans following consultation and found that performance feedback resulted in superior treatment implementation and student outcomes. Moreover, Reinke and colleagues (2007) found that performance feedback increased teacher use of behavior-specific praise above and beyond initial training and consultation. In this study, teachers focused on increasing praise with individual students in their classroom, but

observations indicated that performance feedback led teachers to increase their use of behavior-specific praise for the targeted students as well as classroom peers. The positive collateral effects found in this study across students are promising, given that school-based consultation needs to be efficacious when applied in real-world settings.

In summary, classroom management is important to teachers and impacts student outcomes. Fortunately, a host of effective classroom management strategies have been identified that can be easily assessed at the classroom level. School-based consultation targeting the classroom level, “classwide consultation,” may be an efficient method for improving classroom management. In addition, performance feedback, shown to improve the fidelity of intervention implementation, can be used in combination with consultation to create positive change. This idea has been supported by research indicating that when schools provide consultation, support, and training to teachers a reduction in special education referrals is experienced (National Research Council, 2002). Therefore, development of a classwide consultation model that involves a comprehensive assessment of critical classroom variables in combination with ongoing teacher feedback and support may be effective at increasing teacher use of effective classroom management strategies, in turn producing positive student outcomes.

The Classroom Check-up

The Classroom Check-up (CCU) was developed by the authors as a classwide consultation model that addressed the need for classroom level support while minimizing treatment integrity problems common to school-based consultation. The CCU builds on existing consultation models by emphasizing classwide change and motivational enhancement strategies that are informed by extensive social psychological literature. It was patterned after the Family Check-up (FCU), an assessment intervention designed for and effectively implemented with families of children with problem behaviors (Connell, Dishion, Yasui, & Kavanagh, 2007; Dishion & Kavanagh, 2003; Shaw, Dishion, Supplee, Gardner, & Arnds, 2006). Both the CCU and FCU are grounded in Motivational Interviewing, an empirically-driven theory of behavior change (Miller & Rollnick, 2002). Some specific motivational enhancement strategies utilized by the CCU include personalized feedback to teachers on classroom behaviors, encouraging personal responsibility for decision making while offering direct advice if solicited, development of a menu of options for interventions, and supporting teacher self-efficacy by identifying existing strengths and times when teachers have successfully changed classroom behaviors in the past (see Miller & Rollnick, 2002).

The purpose of the CCU was to (a) target teachers’ motivation to maintain current practices that are important for student success, (b) reduce teacher-student interactions that are likely to exacerbate problem behaviors, and (c) increase teacher behaviors that promote student competence and success. The CCU involves a series of steps: (1) assessing the classroom, (2) providing the teacher with feedback, (3) developing a menu of interventions, (4) choosing the intervention collaboratively with the teacher, and (5) having the teacher self-monitor implementation of the intervention (See Table 1). Following the components of the CCU teachers received daily visual performance feedback; data-based objective feedback on the current performance of targeted behaviors graphically illustrated.

The purpose of the study was to implement and evaluate the effects of the CCU on teacher implementation of effective classroom management strategies, in particular teacher use of praise. Visual performance feedback was hypothesized to enhance the effects of the CCU by further increasing teacher implementation of classroom management strategies targeted by the individualized classroom interventions. In addition, changes in classroom disruptive behavior that coincided with the use of the CCU and visual performance feedback were assessed.

The study replicates previous research concerning the effects of performance feedback and extends the current literature on school-based consultation. Notable features of the present study that expand this research include the following: (a) evaluation of the CCU, a classwide consultation model, alone and in conjunction with performance feedback, (b) collaborative development and implementation of classwide interventions, (c) direct, rate measures of targeted teacher and student behaviors throughout the study, and (c) collection of data one-month following implementation of the CCU plus visual performance feedback to assess for maintenance of effects.

Methods

Participants and Settings

Research participants included four White female general education elementary teachers (one first grade, two second grade, one fifth grade). Teachers were the primary participants; therefore individual students were not a focus—all student data were aggregated by class. Teachers were selected for participation based on their request for support with classroom management difficulties. Teaching experience varied for participants. Classroom Teacher One had 25 years of teaching experience, Classroom Teacher Two had 14 years of experience, Classroom Teacher Three had 13 year of experience, and Classroom Teacher Four had five years of experience. The study was conducted in two elementary schools located in the Pacific Northwest region of the U.S. The demographics of students from the two schools were representative of students from this area (School 1: 77% White, 20% Latino, 2% Native American, 1%, African American, less than 1% Asian; School 2: 89% White, 7% Latino, 2% African American, 1% Asian, less than 1% Native American). The percent of students receiving free and reduced lunch was 76% for the first school, and 44% for the second.

Measures of Dependent Variables

The dependent variables for this investigation included (a) teacher variables: occurrences of teacher praise (both behavior-specific and general praise) and occurrences of teacher reprimands, and (b) student variables: occurrences of student disruptive behavior. Teacher praise was selected as a primary dependent variable because the individualized intervention plans developed as part of the CCU included major components that targeted the increase of praise for all teachers (see Table 2 showing the multi-component interventions developed for each classroom).

A 10-minute direct observation frequency count of teacher and student dependent variables was conducted daily in each participating classroom. Data collection always occurred during the same time period and classroom topic (mathematics instruction). These data were collected by trained observers who were unaware of the intervention or research questions. All behaviors were counted simultaneously throughout the observation using the real-time Multi-Option Observation System for Experimental Studies (MOOSES) software (Tapp, 2004). MOOSES is a computer-based observation system that allows for simultaneous collection of discrete events and general durational measures along a real-time continuum (Tapp, Wehby, & Ellis, 1995). Data obtained from the daily observations were downloaded into a spreadsheet using Microsoft EXEL for daily visual analysis. The following sections provide the behavioral definition of each dependent variable.

Teacher Behaviors: Praise—The definition for praise included any verbal statement or gesture that indicated teacher approval of a desired student behavior. The statement or gesture needed to be above and beyond confirmations of correct academic responses. For example, “Good answer” would be coded as praise, but “Yes, that’s correct” would not. Praise was separated into behavior-specific and general praise during data collection. Combining the total

number of behavior-specific and general praise statements calculated the frequency of overall praise statements.

Teacher praise was coded as being behavior-specific if specific feedback for the desired student behavior was provided (e.g., “China, I like the way you are listening,” or “Keith, thank you for raising your hand”) rather than praise without feedback (e.g., “Good job,” or “China, nice work”). Research indicates that behavior-specific praise increases on-task behavior (Sutherland et al., 2000). Teacher praise was coded as being general if no specific feedback for the desired student behavior was provided. Nonverbal praise such as thumbs up, stickers, and high fives were coded as general praise.

Teacher Behaviors: Reprimand—Reprimands were defined as verbal comments or gestures made by the teacher indicating disapproval of student behavior. Examples of reprimands included verbal reprimands, banging on a desk, and stopping the lesson until the student discontinued the negative behavior. Reprimands were recorded when directed to the whole class, a group of students, or individuals.

Student Behaviors: Classroom Disruptive Behavior—Disruptive behavior was coded for any statements or actions by an individual student or group of students that disrupted or interfered with ongoing classroom activities for the teacher (e.g., talk outs during instruction, any behavior reprimanded by the teacher, questions or comments unrelated to the task) and/or one or more peers (e.g., hitting or poking a peer, fighting, noises or actions that clearly distracted classroom peers). Disruptions were coded as discrete events (e.g., two students fighting was one disruption, one student talk out was one disruption).

Measures of Independent Variables

Classroom Check-up—The components of the CCU are outlined in Table 1. Step one of the CCU was comprised of assessing the classroom environment through direct observation, and completion of a teacher interview and brief classroom ecology checklist by the consultant. The purpose of the teacher interview was to establish rapport and to discover areas of strength and weakness (self-identified by the teacher) within the current classroom management system. The classroom ecology checklist collected information about the instructional and behavior management systems of the classroom, routines and expectations, and the physical layout of the classroom.

After a stable baseline period the consultant met with the teacher to convey the results of the comprehensive classroom assessment. Participants remained in baseline until classroom observations demonstrated at least three days of unchanging rates of praise or a decreasing trend in praise. The feedback session (step two) led to the collaborative development of a menu of potential intervention strategies (step three) from which the teacher developed an individualized classroom intervention to implement in their classroom (step four). Step five of the CCU (teacher self-monitoring of treatment integrity) began on the first day of implementation of the individualized classroom intervention.

Self-Monitoring Treatment Integrity—Each participating teacher self-assessed the degree to which they implemented the intervention plan developed during the fourth step of the CCU. The teachers were provided with a procedural checklist for the multiple components of the individual classroom intervention plan. Teachers monitored whether or not they successfully completed each component of the intervention. Each day the teachers checked off the number of steps to the intervention they completed.

Visual Performance Feedback—Visual performance feedback was provided to teachers on a daily basis as an intervention separate from the CCU. During this phase, each day, participating teachers received a line graph depicting the rate of teacher provided praise and classroom disruptive behaviors observed in the classroom. The data were not discussed with the teacher. The consultant handed the graph directly to the teacher at the beginning of each day. Teachers were provided instructions on how to interpret the graphs at the onset of the study. All teachers indicated that they could interpret the data provided in the graph without difficulty. It was decided that performance feedback involving daily verbal review of the information with the teacher would be considered impractical in the real world setting. Thus, performance feedback was limited to *visual* (graphic) representation of the teacher's performance.

Performance feedback on the rate of praise was provided to all four teachers because all four teachers chose increasing praise as the main target for intervention in the classroom. Data for all days prior to the day the teachers received the line graph were included. This allowed the teachers to view the simultaneous change in rates of praise and student disruptive behavior over time. The data used to provide teachers with visual performance feedback was obtained from the 10-minute direct observation data collected daily by independent observers in the classroom.

Measures of Social Validity

As an additional measure, a questionnaire consisting of six items on a 4-point scale was used to assess teacher acceptability and satisfaction with regard to the design and implementation of interventions developed as an outcome of the CCU, and the use of visual performance feedback. Items focused on feasibility, effectiveness, and social validity. Social validity refers to the assessment of the social significance of the goals of an intervention process, the social acceptability of the intervention procedures to obtain those goals, and the evaluation of the social importance of the produced effects (Gresham & Lopez, 1996; Wolf, 1978). Items for the questionnaire were based on a review of related research. The questionnaire was not intended as a primary outcome measure, but as a descriptive measure of teacher perceptions of the intervention. The teachers responded anonymously to the questionnaire.

Procedures

Experimental Design—A single subject multiple baseline across classrooms design was used to determine the functional relationship between the independent variables (CCU and Visual Performance Feedback) and the dependent variables (teacher and student behavior) (Barlow & Hersen, 1987). Single subject research designs are appropriate for education research in that they emphasize the individual as the unit of analysis, allow for practical applications of interventions, and through replication, expand external validity of socially important educational outcomes (Horner et al., 2005). Decisions for changing phases were based on overall praise data stability for each participating teacher. Participants remained in baseline until baseline conditions demonstrated stable rates or decreasing trends for praise. Each participant received the intervention when a pattern of behavior was established for the participant in the preceding position.

Data were analyzed from each phase for changes in trend, level, immediacy of effect, overlap, and similarity of effects in similar conditions (Parsonson & Baer, 1978). Visual analysis allows for every aspect of the data to be examined to determine sources of variability, rather than just overall effects (Richards, Taylor, Ramasamy, & Richards, 1999). Descriptive statistics (e.g., range, mean, effect size) and visual analysis were used to assess changes in the dependent and independent variables.

Baseline—For each of the participating classrooms collection of baseline data began in the first week of the study. The consultant met with each classroom teacher, reviewed consent procedures, and completed a brief teacher interview. Data collectors gathered observational data of targeted student and teacher variables daily.

CCU/Self-Monitoring Phase—After a stable trend in the baseline data across each classroom the consultant arranged a meeting to provide the teacher with feedback of information obtained from step one of the CCU (baseline data collection). Both classroom protective factors (areas of the CCU assessment on which the teacher scored well) and risk factors (areas of the CCU assessment on which the teacher scored poorly) were discussed during the feedback session. An individual classroom intervention plan was collaboratively designed. The teacher was provided with an intervention self-monitoring form. The teacher self-monitored implementation of the intervention by placing a check next to each component of the intervention that was fully implemented each day. Daily direct observational data continued to be collected on teacher and student variables.

Visual Performance Feedback Phase—Upon the completion of the CCU and after a stable trend in the data occurred, each teacher received visual performance feedback. Daily direct observational data continued to be collected on student and teacher variables.

Follow-up Data—Follow-up data were collected on the maintenance or extension of behavioral changes one month after the completion of the intervention period. Researchers collected three days of observational data in three of the participating classroom, and two days in one participating classroom, to determine any lasting effects of the intervention.

Training for Direct Observation Data Collection—Training of data collectors for direct observations incorporated written definitions including several examples and non-examples of each behavior, coding of a videotaped recording of classroom behaviors, and observations within the participating classrooms. Each observer was required to obtain 85% reliability agreement for all variables before collecting data for the study. In situ observations were conducted for two weeks prior to beginning baseline data collection, insuring reliability for data collectors as well as allowing a time period for participating teachers and students to become comfortable with observations within the classroom setting.

Weekly one-hour research meetings and ongoing interobserver reliability observations were conducted to decrease observer drift. Additionally, when interobserver reliability on any variable fell below 85% for a data collector, a lead observer (person consistently reliable) attended observations until interobserver reliability was re-established at 85% for the data collector. Data from the lead observer was used during observations with low reliability.

Interobserver Reliability—Observer reliability was established for 42% of the direct observation sessions. Reliability data were distributed across phases and classrooms to identify and alleviate observational drift (Barlow & Hersen, 1984). At no time throughout the study were the data collectors aware of the research questions.

Interobserver reliability scores were calculated by the MOOSES program. This program computed an agreement ratio for frequency variables ($\text{agreements}/(\text{disagreements} + \text{agreements}) \times 100$). An agreement was scored if observers coded the same variable within a 5-second window. If observers coded a variable outside of the 5-second window, a disagreement was scored. The mean agreement for teacher behavior-specific praise was 85% (0%–100%), general praise was 80% (20%–100%), overall praise was 83% (40%–100%), reprimands was 82% (25%–100%), and classroom disruptive behavior was 82% (29%–100%). The overall agreement for each dependent variable met the minimal standards of 80% or higher.

for single subject research (see Horner, et al., 2005). Agreement scores that dropped below 0.80 were due to either (a) low occurrences of those behaviors, or (b) behaviors were recorded outside of the 5-second window.

Procedural Integrity—Procedural integrity measures the extent to which experimental procedures were implemented as intended. Several steps were taken to monitor procedural integrity of the CCU. First, the consultant completed a fidelity checklist during teacher interviews and CCU feedback sessions to ensure that the intervention occurred as intended. The checklist contained 18 steps for the teacher interview and nine steps for CCU feedback sessions. The consultant completed 100% of steps for both the interviews and feedback sessions. Secondly, each teacher interview and CCU feedback session was audiotaped. These audiotapes were reviewed by independent researchers and coded for fidelity of implementation. Finally, interobserver reliability was conducted and calculated for the evaluation of procedural integrity by the independent researchers. Reliability was established for 30% of the teacher interviews and 30% of the CCU feedback sessions. Interobserver agreement was 100% for both teacher interview audiotapes and feedback session audiotapes.

Results

Teacher Behavior

Rates of Praise Delivered to Students—Descriptive statistics, including the effect size, for teacher use of praise are provided in Table 3. To determine the relevance or practical significance of the outcomes associated with each classroom teacher variable an effect size was calculated. Effect size estimates the magnitude of the change associated with intervention phases versus baseline conditions. In this case two intervention phase summaries were calculated: (1) the standard mean difference for each variable in the CCU/Self-monitoring phase and (2) the standard mean difference during the CCU/Self-monitoring plus Visual Performance Feedback phase (see Olive & Smith, 2005). The baseline condition is the mean rate for each variable during the baseline phase. A Cohen's *d* measure was used to determine the effect size for each variable. Cohen's *d* is estimated by calculating the difference between the baseline mean and intervention mean divided by a pooled standard deviation. When pooling the standard deviations each treatment phase was weighted by multiplying the number of observations within each treatment phase by the treatment phase standard deviation, adding the standard deviations, and dividing by the number of total observations across both the baseline and treatment phases (Rosnow & Rosenthal, 1996).

Cohen provides guidelines for interpreting the practical importance of an effect size when no prior research is available to anchor Cohen's *d* meaningfully. Cohen's rule of thumb for a small, medium, and large effect size is based on a wide examination of the typical difference found in psychological data. A small effect size for Cohen's *d* is .20 to .49; a medium effect size is .50 to .79; and a large effect size is .80 or higher (Cohen, 1992).

Classroom Teacher One had an additional phase in which the teacher returned to self-monitoring only. The researchers were interested in evaluating the functional relationship between praise and visual performance feedback. Unfortunately, the number of data points for the second self-monitoring only phase for this classroom was limited due to the occurrence of student statewide assessments. Thus, only two data points were collected during this phase. The two data points collected indicate a decline in Classroom Teacher One's rate of praise, hovering slightly above data collected during the previous CCU/Self-monitoring phase.

Follow-up data, or data collected on maintenance of behavioral changes, was collected one month following the end of the Visual Performance Feedback phase. Follow-up data indicated that praise rates for all classroom teachers remained at a rate higher than that at baseline despite

downward trends. The mean rate of praise delivered to classroom students during the follow-up period for Classroom Teacher One was 1.17 with a range of 0.80 to 1.80. The mean rate of praise delivered to classroom students during the follow-up period for Classroom Teacher Two was 2.53 with a range of 1.60 to 3.30. Classroom Teacher Three delivered praise to classroom students at a mean rate of 3.53 with a range of 2.00 to 5.70. Classroom Teacher Four had a mean rate of praise of 2.40 with a range of 1.90 to 2.90.

The proportion of behavior-specific praise statements versus general praise statements used in each classroom is displayed in Figure 1. Teacher participants show a trend of increased use of behavior-specific praise and decreased use of general praise in their classrooms at post-intervention and follow-up.

Reprimands Delivered to Students—Descriptive statistics, including the effect size, for reprimands across phases, are provided below in Table 3.

Student Behavior

Classroom Disruptive Behavior—Descriptive statistics, including the effect size, for classroom disruptive behavior across phases, are provided below in Table 3.

Teacher Praise and Student Disruptive Behavior—Teacher rates of praise and student disruptive behaviors for each classroom are displayed in Figure 2. During the baseline phase of the study all classrooms were observed to have higher rates of classroom disruptions than praise. Classroom One demonstrated an initial decrease in the rate of disruptions along with a minor increase in praise during the CCU/Self-monitoring phase. During the Visual Performance Feedback phase, her rate of praise increased above the rate at baseline. A separation occurred by the end of the study in which the rate of praise delivered to students remains higher than classroom disruptions with no overlapping data points. There is no noticeable change during the CCU/Self-monitoring phase for Classroom Two, but during the Visual Performance Feedback phase the rate of praise was higher than the rate of disruptions. This trend in the data occurred for all four classrooms.

Classroom Three showed similarities to Classroom One in that during baseline the rate of classroom disruptions were extremely high, exceeding the rate of praise observed in the classroom. During the CCU/Self-monitoring phase Classroom Teacher Three continued to increase her rate of praise delivered to students and the rate of classroom disruptions dropped. The trends toward increasing praise coincided with decreasing classroom disruptions. Classroom Three had no data points during the Visual Performance Feedback phase in which the rate of praise was lower than the rate of classroom disruptions.

Classroom Four had a relatively low rate of classroom disruptions and praise during baseline. However, the majority of data points during baseline for rate of classroom disruptions were higher than the rate of praise. During the CCU/Self-monitoring phase and the Visual Performance Feedback phase, Classroom Four increased the rate of praise delivered to students, with little change in the rate of classroom disruptions.

At follow-up, one month later, all four classrooms demonstrated higher rates of praise and lower rates of disruptions. However, downward trends in praise were observed across classrooms.

Social Validity—Social validity information, although not considered a main outcome variable, was collected one time before implementation of the intervention and one time at the end of the study. The answers to the questionnaire were made anonymous by having each participant provide a code disconnected from their identity. The questionnaire targeted

information related to the social implications of the study. In particular the questionnaire assessed the teachers' belief in the importance, effectiveness, and intrusiveness of consultation and classroom management support as an intervention. The results are separated by category and discussed below.

Importance—Prior to the intervention two teachers reported believing that consultation and classroom management support to be fairly important and two teachers felt this type of intervention to be very important. Upon completion of the study all four teachers believed that consultation and support were very important.

Effectiveness—Prior to the intervention teachers varied in their response to how effective they believed the intervention would be in their classroom (ranging from feeling unsure if the intervention would be effective to feeling the intervention would be very effective). Upon completion all teachers, except the teacher who had reported the highest level at baseline, had increased the level in which they felt the intervention to be effective.

Intrusiveness—Prior to the intervention all four teacher reported believing that consultation and classroom management support was somewhat intrusive. Upon completion of the study two teachers reported that the intervention was not intrusive and two teachers continued to believe the intervention somewhat intrusive. In addition, when asked if the amount of time, resources, and effort required for the type of intervention was appropriate one teacher was unsure, two felt that the that it was very reasonable, and one teacher felt that it was mostly reasonable. Upon completion of the study three teachers felt that the time and resources necessary for the intervention were very reasonable and the one teacher who was unsure, now felt it to be mostly reasonable.

Confidence and Overall Reaction—Prior to the intervention all teachers reported feeling fairly confident in their ability to implement classroom management strategies developed from consultation. Upon completion of the study all but one teacher reported feeling very confident in their ability.

Discussion

This study was a preliminary investigation to assess the relative effects of a consultation model at the classroom level, the CCU, and Visual Performance Feedback on the implementation of effective classroom management strategies by teachers. Results indicated that rates of praise did not consistently increase following the CCU/Self-monitoring phase alone, but were shown to increase for all teachers during the CCU plus Visual Performance Feedback phase. The results are consistent with Noell and colleagues (2005) who found that teacher implementation of a classroom intervention were greatest during the use of performance feedback.

Results indicated an increase in use of behavior-specific praise across all classrooms. The increase in use of behavior-specific praise occurred primarily during the Visual Performance Feedback phase. The increase in behavior-specific praise was noteworthy because the teachers received Visual Performance Feedback on their use of overall praise, not their use of behavior-specific praise. Perhaps the combination of consultation and performance feedback is responsible for this outcome. For instance, the consultant emphasized that research has shown the effectiveness of behavior-specific praise in reducing disruptive behavior in the classroom. Then, performance feedback on the rate of praise helped the teachers to increase the type of praise they most wanted to employ after consultation, behavior-specific praise.

Despite the fact that none of the teachers identified the need to reduce reprimands as a component of their individualized classroom intervention, teacher use of reprimands decreased

during the CCU plus Visual Performance Feedback phase across all classrooms. Classroom Teacher One had a minor increase in use of reprimands during the CCU/Self-monitoring phase; however, she also had the lowest mean rate of reprimands during the baseline phase. Classroom Teacher One identified teaching classroom expectations as one of the components of her individualized classroom intervention developed as part of the CCU. It is possible that disruptive and noncompliant behavior became more apparent to Classroom Teacher One after clear classroom expectations were established, resulting in an initial increase in reprimands. Over time, in combination with the CCU plus Visual Performance Feedback phase, all teachers, including Classroom Teacher One, decreased their use of reprimands. The lower levels of reprimands may have been accounted for by reductions in student disruptions, and/or redirection of teacher attention toward praising appropriate behavior rather than toward reprimanding inappropriate behavior.

In addition to investigating the effect of the CCU and Visual Performance Feedback on the implementation of effective classroom management strategies by teachers, the study evaluated changes in classroom disruptive behavior. During the baseline phase, visual analysis revealed higher rates of classroom disruptions than teacher praise for all classrooms. During the CCU plus Visual Performance Feedback phase, decreases in classroom disruptions directly coincided with increased rates of praise. The CCU plus Visual Performance Feedback resulted in increased rates of praise for all four teachers and decreased rates of disruptive behavior for students in two classrooms. The greatest decrease in classroom disruptions occurred for Classrooms One and Three, not surprisingly, given that these two classrooms had the highest rates of classroom disruptions at baseline, leaving them with more room for improvement.

In addition to assessing changes in teacher and student behavior, social validity of the intervention was assessed. It is important to note this data was descriptive in nature given the small sample size and limited information regarding the psychometric properties for the questionnaire. Overall, teachers rated the intervention as important, effective, helpful, and thus socially valid. The CCU has the advantage of individually tailoring the consultation process to the teacher's strength and weaknesses. Further, the teachers were intimately involved in the development of the intervention goals. Thus, it was expected that the teachers would find the goals to be important. Additionally, three of the teachers indicated that their level of confidence in implementing effective classroom management strategies increased as a result of the consultation process. This finding is important because teachers who feel confident in their ability to implement effective strategies (i.e., have high teaching self-efficacy) are more likely to continue to use the strategies in the future (see Tucker et al., 2005).

The CCU also addresses the concern articulated by Gresham and Lopez (1996) with regard to social validity. They expressed concern about relying exclusively on the consultee for determining the social validity of intervention goals. The concern developed from research showing that some educators do not necessarily support or implement empirically-based research. The CCU provides a model in which the consultant guides the development of the intervention by providing feedback and expert advice. As part of the CCU, teachers were made aware of relevant research that supported the specific interventions and were trained in the implementation of empirically-based strategies. These strategies were incorporated into each of the individualized classroom interventions.

Overall, the CCU plus Visual Performance Feedback was most useful in improving teacher implementation of classroom management strategies, especially total use of praise, use of behavior-specific praise, and decreased use of reprimands. These changes in teacher behavior contributed to positive changes in student behavior through decreased classroom disruptions. Moreover, the changes in teacher and students behavior at one month follow-up were promising. At the time of the follow-up, teachers were no longer receiving daily visual

performance feedback nor were they self-monitoring their own behavior. Despite this, the gains observed during the intervention phases remained to some extent, however, interpretation is limited given the downward trends in teacher use of praise. Yet, it is possible that the promising rates of praise at follow-up came as a result of improved skills, confidence and fluency with use of the skill, and reinforcement from positive changes in student behavior.

Although results from this study are promising, several limitations should be considered when drawing conclusions. First, although the multiple baseline design allows for replication within the study, small sample size limits the generalizability of the results. In particular, the teacher participants were all voluntary, the study occurred during the same instruction period, and the ethnic and racial diversity of the sample was limited. Systematic replications of experimental conditions across different content areas, participants, and settings will be necessary to increase external validity. Second, the use of effect size calculations to facilitate the interpretation of outcomes has limitations when used with single subject research designs. However, when effect size standard mean difference tests are used in conjunction with individual participant graphs they can be helpful in understanding the magnitude of change for participants (see Olive & Smith, 2005). Third, some of the interobserver reliability scores were low. However, the mean agreement for all variables were within the conventional cutoff of 80%. Those scores below 80% were primarily due to either the low occurrences of those behaviors or because the behaviors were recorded outside of the 5-second window. In addition, while direct observation of teacher behaviors targeted by the individualized classroom interventions were measured (e.g., praise), no direct observation of the actual components to the interventions were assessed. Rather, the study utilized teacher self-monitoring of the components of the intervention. Therefore, no direct observation of treatment integrity was available. Future studies could include direct assessment of intervention integrity to allow for comparison of teacher reported integrity and observed integrity.

Lastly, follow-up data collected one month following implementation of the intervention phases, although encouraging, is limited due to the number of data points and the short follow-up period. Additionally, while changes in student behavior remained, teacher rates of praise showed a downward trend in three of the four classrooms. It should be noted that follow-up data were collected in the final weeks of the academic school year, a time known for increased behavioral difficulties among students and decreased provision of structure by teachers, leading one to expect less hopeful data for this time of the year. Yet, behavior change at one month may be less significant if measured a year later. Future studies may follow teachers over longer periods of time to assess for the maintenance of long-term behavior change. Additionally, studies that assess the effects of consultation on teacher implementation of classroom management across school years can provide information about the long-term preventive effects of consultation.

The findings are important for school psychologists providing indirect service. Evidence from this study and others (see Noell, et al., 1997; Noell, et al., 2000; Reinke et al. 2007) suggest that one-shot consultation and training may not be enough to effectively create classroom change. Teachers may need additional support to overcome the difficulties associated with changing longstanding behaviors when attempting to implement effective classroom management strategies. School psychologists could use the CCU to provide routine evaluations of classroom variables shown to influence student outcomes such as use and type of praise, reprimands, and provision of opportunities to respond (Brophy 1983; Council for Exceptional Children, 1987; Lewis & Sugai, 1999). School psychologist providing indirect service may find the structure and collaborative nature of the CCU consultation model beneficial.

The findings reported expand the literature on school-based consultation. The CCU is a classwide consultation model designed to increase the likelihood of changes in teacher behavior

through feedback and support. The study focused on important changes in classroom management that are linked to improved outcomes for students. The results provide support for use of the CCU plus Visual Performance Feedback to increase praise, increase use of behavior-specific praise, and decrease reprimands, leading to lower levels of student disruptions. This is especially important given that research indicates that classrooms with poor behavior management place students in those classrooms at risk for future behavior problems, including antisocial behavior (Kellam et al., 1998). The results are encouraging because they suggest that classroom consultation can create meaningful and lasting teacher and student behavior change at the classroom level.

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Biography

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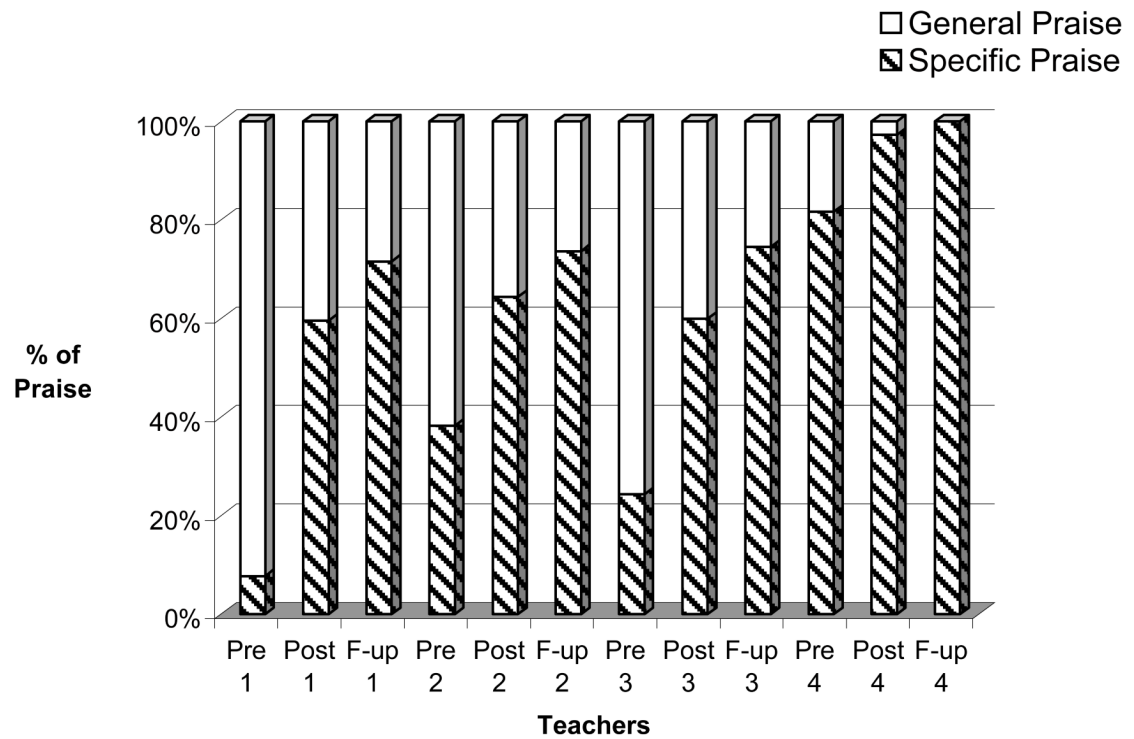


Figure 1.
Proportion of Specific Versus General Praise

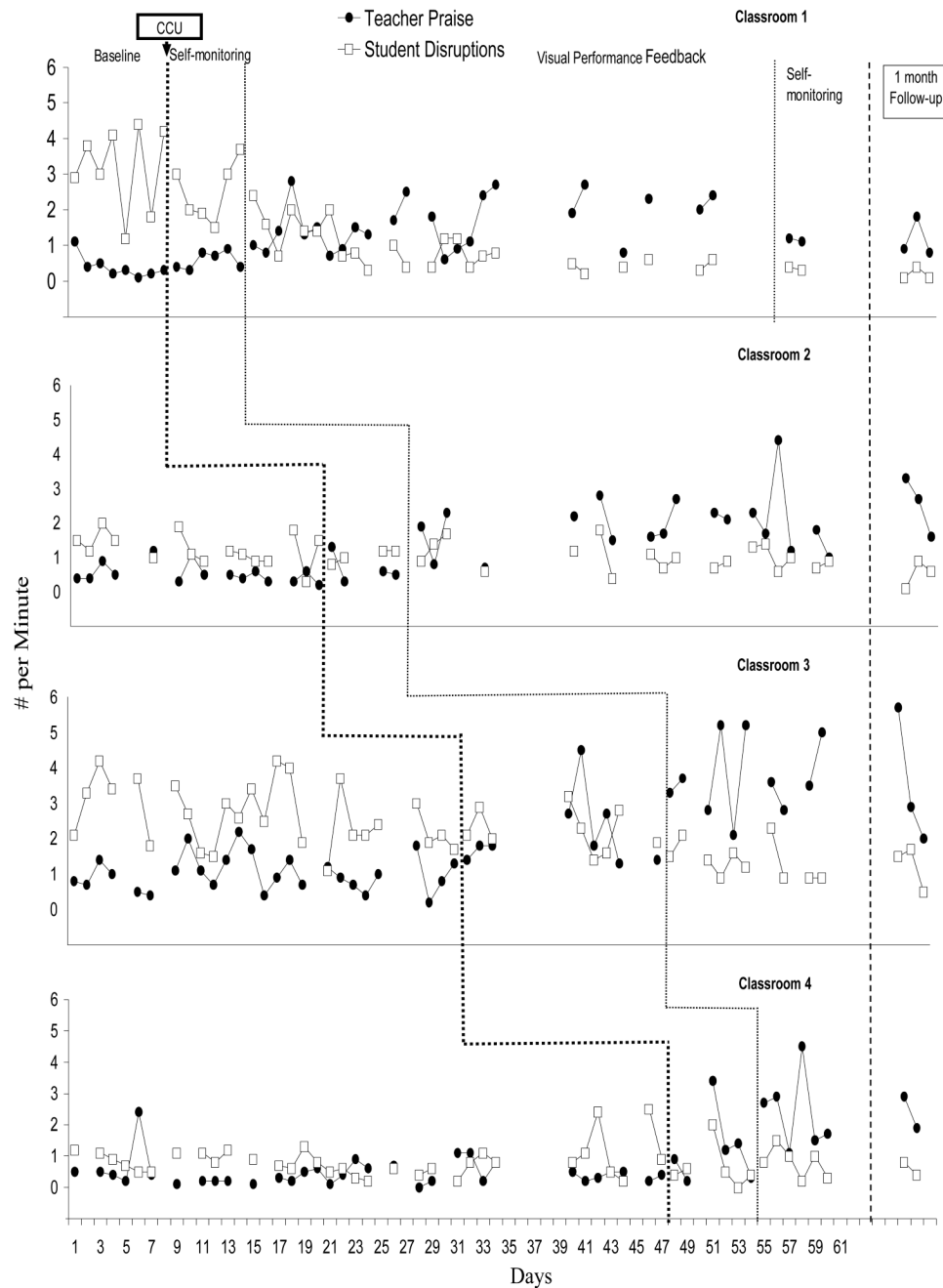


Figure 2.
Rate of Teacher Praise and Student Disruptive Behavior

Table 1

Components of the Classroom Check-Up

Step 1: Assess Classroom

- ☒ Teacher Interview
- ☒ Classroom Ecology Checklist
- ☒ Classroom Observations

Step 2: Feedback

- ☒ Consultant provides feedback on assessment findings
- ☒ Feedback includes strengths and weaknesses

Step 3: Menu of Options

- ☒ Teacher and consultant collaboratively develop a menu of options for intervening to create positive classroom outcomes

Step 4: Choose Intervention(s)

- ☒ Teacher chooses intervention(s) to implement
- ☒ Consultant provides ongoing support in the implementation of the intervention(s)

Step 5: Teacher Self-Monitoring of Treatment Integrity

- ☒ Teacher monitors daily implementation of the chosen intervention using an intervention procedural checklist

Table 2**Individualized Intervention Components by Classroom**

Number of Components	Individualized Classroom Intervention Plans			
	Classroom 1	Classroom 2	Classroom 3	Classroom 4
1	Used a reminder to help increase praise.	Developed a goal for the day to increase specific praise	Taught/reviewed/used bell for attention signal	Used a reminder symbol to increase praise
2	Increased use of praise and it was behavior specific praise.	Used one of the following to increase specific praise: reminder, rehearsal, using student name	Set a daily goal to increase praise	Used the Praise plus two strategy and kept praise specific
3	Taught/Reviewed Expectations	Doubled up on praise, providing praise to one student after another to increase praise	Ignored behaviors that could be ignored. Praised others instead.	Handed out tickets following specific praise as to why they were receiving the tickets
4	Started math instruction at specified time.	Stuck to curriculum with no more than one story problem to increase pacing	Used a reminder to increase specific praise and specific reprimands	
5		Handed out chance tickets or provided verbal praise to students on task and/or participating	Increased praise, especially specific praise using verbal praise, respect tickets, and/or good news reports	

Table 3
Descriptive Statistics for Teacher and Student Behaviors

Baseline			CCU/Self-Monitoring			CCU + Visual Performance Feedback		
M	SD	M	SD	ES	M	SD	ES	
Classroom 1								
Praise	0.39	0.31	0.25	+0.69**	1.42	0.67	+1.73***	
Behavior-specific Praise	0.03	0.05	0.13	+2.17***	0.84	0.51	+2.00***	
General Praise	0.36	0.29	0.19	+0.08	0.57	0.39	+0.56**	
Reprimand	0.38	0.21	0.23	+1.03 [†]	0.33	0.20	-0.23*	
Disruptions	3.18	1.18	0.84	-0.64**	1.24	0.71	-2.40***	
Classroom 2								
Praise	0.55	0.51	0.53	+0.25*	1.71	0.93	+1.53***	
Behavior-specific Praise	0.21	0.35	0.45	+0.52**	1.1	0.85	+1.37***	
General Praise	0.34	0.23	0.17	-0.29 [†]	0.61	0.40	+0.82***	
Reprimand	0.79	0.25	0.22	-0.95***	0.58	0.22	-0.86***	
Disruptions	1.23	0.46	0.51	-1.06	0.96	0.39	-0.62**	
Classroom 3								
Praise	1.03	0.59	1.35	+1.31***	2.98	1.08	+2.44***	
Behavior-specific Praise	0.25	0.24	0.71	+1.60***	1.78	0.83	+3.15***	
General Praise	0.78	0.47	1.07	+0.72**	1.19	0.62	+0.77***	
Reprimand	1.60	0.67	0.57	-0.92***	0.68	0.23	-1.90***	
Disruptions	2.67	0.91	0.65	-0.38*	1.78	0.51	-1.20***	
Classroom 4								
Praise	0.48	0.44	1.16	+1.34***	1.82	1.23	+2.73***	
Behavior-specific Praise	0.40	0.26	1.15	+1.91***	1.77	1.22	+3.83***	
General Praise	0.09	0.25	0.08	-0.09	0.05	0.07	-0.20 [†]	
Reprimand	0.30	0.26	0.06	-0.85***	0.13	0.13	-0.77***	
Disruptions	0.86	0.52	0.69	-0.38*	0.73	0.57	-0.30*	

* indicates small effect size

** indicates medium effect size

*** indicates large effect size

[†] indicates significant effect size in the direction not hypothesized