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The Effect of Visual Performance Feedback on Teacher Use of Behavior-Specific Praise

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This study evaluated the effects of visual performance feedback (VPF) on teacher use of behavior-specific praise. In addition to receiving individual VPF, teachers participated in group consultation focused on increasing competence in the use of behavior-specific praise. Three general education elementary teachers and six students participated in the study. Classroom peer composite data were also collected. Teacher and student behaviors were monitored across baseline and VPF conditions in a multiple baseline design. The results indicated that VPF resulted in an increase in behavior-specific praise for participating students across all teachers relative to baseline. Additionally, teachers increased their use of behavior-specific praise with classroom peers. The findings highlight the need for direct assessment of intervention implementation and for the collection of peer data to identify collateral intervention effects.

Keywords: *classroom management; school-based consultation; performance feedback*

Managing students' disruptive classroom behavior can be a consuming task that reduces the amount of time teachers spend on instruction. Effective classroom management can help to decrease disruptive classroom behaviors and increase student engagement in academic tasks. Furthermore,

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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 characteristic associated with effective classroom management is the amount of praise provided by teachers.

Teachers who deliver a high amount of praise typically experience lower off-task or disruptive behaviors from their students (Espin & Yell, 1994). Praise has been shown to both increase appropriate behavior of disruptive students and increase academic engagement of students in general education (Hall, Lund, & Jackson, 1968). Increasing academic engagement and decreasing disruptive behaviors allows more time for instruction.

Teacher praise is most effective when it is behavior specific (Brophy, 1983). Behavior-specific praise explicitly identifies to the student the behavior for which she or he is being praised (i.e., "China thank you for sitting in your chair quietly"). Behavior-specific praise is cost-free, takes little physical effort to implement, is not time-consuming, and is not intrusive to the classroom. Yet research has shown that as little as 5% of teacher praise statements are behavior specific (Anderson, Evertson, & Brophy, 1979).

Performance feedback, or the provision of data-based objective feedback on current performance of targeted behaviors, may be an efficient and useful tool for increasing teacher use of behavior-specific praise. Sutherland, Wehby, and Copeland (2000) examined the effect of a performance feedback intervention on the rate of a teacher's behavior-specific praise of students with emotional and behavioral disorders. The intervention consisted of a classroom evaluator meeting briefly with the teacher to provide verbal feedback on the observed rate of behavior-specific praise recorded during social skills lessons. They found on-task behavior increased from 49% to 86% when behavior-specific praise was increased in the classroom.

Other studies have shown performance feedback to be an effective tool for increasing the effectiveness of school-based consultation with teachers. For instance, Jones, Wickstrom, and Friman (1997) compared the effectiveness of traditional behavioral consultation with and without performance feedback. They found that treatment integrity following consultation alone for three teachers ranged from 9% to 37%. The addition of performance feedback increased treatment integrity for all three teachers to levels ranging from 60% to 83%. Hence, to create meaningful change in teacher behavior, the use of performance feedback can be an integral component of the consultation process.

Furthermore, Noell and colleagues (2005) investigated teacher implementation of treatment plans following consultation. Three follow-up procedures were investigated: (a) brief weekly interviews focused on teachers'

implementation of intervention, student behavior change, and concerns; (b) weekly interviews combined with an emphasis on the commitment to implement the treatment; and (c) performance feedback (i.e., weekly meetings during which data on student behavior and intervention implementation were presented graphically and discussed). Teacher ratings of consultants and treatment acceptability were similar across conditions. Although treatment implementation did not differ for the weekly follow-up meeting and the commitment emphasis conditions, performance feedback resulted in superior treatment implementation and student outcomes.

Many of the studies using performance feedback have included individual meetings with a consultant, review of the intervention, and visual depiction of current implementation. However, both teachers and consultants may find weekly or daily meetings to review performance unfeasible. Such ongoing meetings may not be possible when teachers begin to implement new classroom interventions. Yet support is often vital if interventions are to be implemented and sustained. Therefore, the purpose of the present study was to expand on the performance feedback literature by providing feedback without consultation meetings to discuss performance and to identify real-world field-based outcomes.

To eliminate consultation meetings in conjunction with performance feedback, participating teachers received a daily visual depicting their use of behavior-specific praise. No consultant contact occurred in conjunction with the delivery of the performance feedback. This type of performance feedback from here on out is referred to as visual performance feedback (VPF).

Thus, the present study examined the effect of VPF on teacher use of behavior-specific praise with students identified by the teachers as disruptive in the classroom. VPF was provided daily in the form of a graph displaying the teachers' observed use of behavior-specific praise provided to identified students. It was hypothesized that VPF would (a) increase teacher use of behavior-specific praise and (b) increase overall use of teacher praise with identified students. Additionally, we predicted that increases in teacher use of behavior-specific praise would lead to decreases in student disruptive behaviors.

Method

Participants and Setting

Six students in three general education third-grade classrooms from suburban elementary schools and their teachers participated in the study. Each general education classroom contained between 20 and 25 students.

Classroom teachers were selected to participate based on the school principal's recommendations and teacher report of having several students exhibiting disruptive classroom behaviors. Three European American female elementary teachers participated. Two of the teachers had 29 years of teaching experience, and the third teacher had been teaching for 4 years. Classroom 2 had a student teacher present in the classroom in addition to the regular classroom teacher for the first 14 days of data collection, and therefore, data collected during this time were dropped from analysis.

Within each participating classroom, two students identified by their classroom teacher as exhibiting behavior problems were selected to participate for a total of six students (one female, five male). All participating students were European American. Additionally, two same-sex students were selected randomly from classroom peers during classroom observation periods to provide peer composite comparison data. The parents or legal guardians of the participating students provided consent for participation. In addition, a letter was sent to the parents or legal guardians of all students in the classroom informing them that daily observations would be conducted in the classroom; this was done as a courtesy and allowed the parents to request that their child not be observed as part of a classroom peer composite. No parents expressed concern.

Following parent permission, the researchers conducted a brief Functional Assessment Checklist for Teachers and Staff (FACTS) for each of the participating students (March et al., 2000). The FACTS was conducted to provide preliminary data on the topography and function of student problem behavior. The FACTS is an assessment measure used to identify a functional behavior assessment hypothesis statement related to problem behavior. Teachers were interviewed to gain information regarding the definition of the problem behavior, the controlling antecedents, and the maintaining consequences for each target student.

Data Collection

Observational data collection occurred in each of the three classrooms on a daily basis throughout the study. Two graduate students, blind to the experimental phase of the study, served as the primary observers. The observers sat in an inconspicuous area of the room that allowed them to observe both the student of interest and teacher simultaneously without disruption. Data collection occurred daily during the same time period and classroom topic. Each observation session lasted 20 minutes. The sessions

included a 10-minute, 10-second partial interval observation of a participating student and a 10-minute, 10-second partial interval observation of a composite of two same-sex peers chosen randomly by the observer. For the peer composite comparison, the first 5 minutes of the observation focused on one same-sex peer randomly chosen, and the final 5 minutes focused on a second same-sex peer randomly chosen from classroom peers. The observations alternated daily between starting with participating students and starting with the peer composite.

Observers listened to a tape-recording of 10-second interval demarcated with a signal; the audiotape was heard only by the observer through the use of an unobtrusive ear piece and a hand-held audio recorder. At the sound of the signal the observers coded the presence or absence of the teacher and student behaviors simultaneously.

Teacher behavior. Teacher behaviors that were tracked, serving as dependent variables, included praise. Praise was defined as any verbal statement or gesture that indicated approval of student behavior. The interaction indicated approval based on the behavior of the student at the time the teacher attended to him or her. Therefore, for teacher praise to be recorded, the student had to be academically engaged. Consequently, student academic engagement data were collected to accurately code teacher behavior. The definition for student academic engagement included attempts or correct demonstrations of the assigned or approved activity (e.g., participation in choral responses, looking at the teacher, working on independent work). The overall number of intervals each student was academically engaged in was used to calculate the probability of teacher praise (i.e., the number of intervals the teacher provided praise divided by the total number of intervals the teacher could have provided praise).

Teacher praise was coded as either behavior-specific praise or general praise. Teacher praise was coded as being behavior specific if specific feedback for the student behavior was provided (e.g., "Keith, I like the way you are listening") rather than a general comment without feedback (e.g., "Keith, good job").

Student behavior. Student behaviors that served as dependent variables included disruptive behavior. Disruptive behavior was defined as any statement or action that could be predicted to disrupt or interfere with ongoing classroom activities for the teacher and one or more peers, including but not limited to negative verbal and physical interactions, talking without permission, being out of their seat without permission, and noncompliance.

Interobserver agreement. Interobserver agreement was collected for 27% of all observations to monitor and assess reliability throughout the study. Reliability data were distributed across phases and classrooms to identify and alleviate observational drift (Barlow & Hersen, 1984). Interobserver agreement was calculated on an interval by interval basis by dividing the number of agreements by total number of agreements plus disagreements and multiplying by 100% (Hartmann, 1977). The mean agreement for teacher behavior-specific praise was 88% (0% to 100%), general praise was 84% (0% to 100%), overall praise was 86% (13% to 100%), student disruptive behavior was 72% (48% to 100%), and academic engagement was 87% (67% to 100%).

Social validity. A questionnaire consisting of eight items on a 4-point Likert-type scale was developed to assess teacher acceptability and satisfaction with the teacher consultation to increase behavior-specific praise and the use of VPF. 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 the review of related research. On this survey, teachers responded to the following items: importance of the strategies, effectiveness of the strategies, intrusiveness of the strategies, whether the strategies provided for treatment of dignity and respect for students, amount of time and effort, their confidence levels, and their overall reaction to the strategies.

Independent Variables

Group consultation. A total of three 30-minute consultation meetings occurred during the study. During these meetings, performance feedback was not provided. The teachers requested that consultation meetings be held as a group. They felt that this would be most beneficial, given that the participating students rotated through each of their classrooms at some point during the week. The focus of the first group consultation meeting was on using effective praise (i.e., behavior specific) to decrease disruptive student behavior. Specifically, teachers were taught the difference between behavior-specific and general praise, and they practiced using behavior-specific praise during the meeting. In addition, the teachers were trained on interpreting the graphically displayed data prior to beginning the VPF phase.

Two additional follow-up group consultation meetings transpired across the period of the study, occurring after Day 12 and Day 22 of data collection. Difficulties in implementation of effective praise were discussed and potential solutions were offered from both the group members and the consultant. The main goal of the consultation meetings was to ensure that participating teachers had the necessary skills to increase their use of behavior-specific praise in the classroom setting.

VPF. During this phase, participating teachers received a graph, generated using Microsoft Excel each day, displaying the amount of behavior-specific praise issued to the participating students in that classroom for all days prior, including during the baseline phase. The graph was provided at the beginning of the day prior to instruction and no verbal feedback was provided on the teacher's performance. The start of VPF was staggered across time.

Experimental Design

A multiple baseline across classrooms design was used to determine the functional relationship between VPF and teacher behavior (Barlow & Hersen, 1984). Each classroom began data collection and received training on the intervention and consultation at the same time. Data points collected immediately following training and consultation are identified in Figure 1. Classroom 2 had a student teacher, in addition to the participating teacher, in the classroom during Observations 1 through 14; thus, these data points were removed from analysis. Each classroom received VPF at intervals staggered across time.

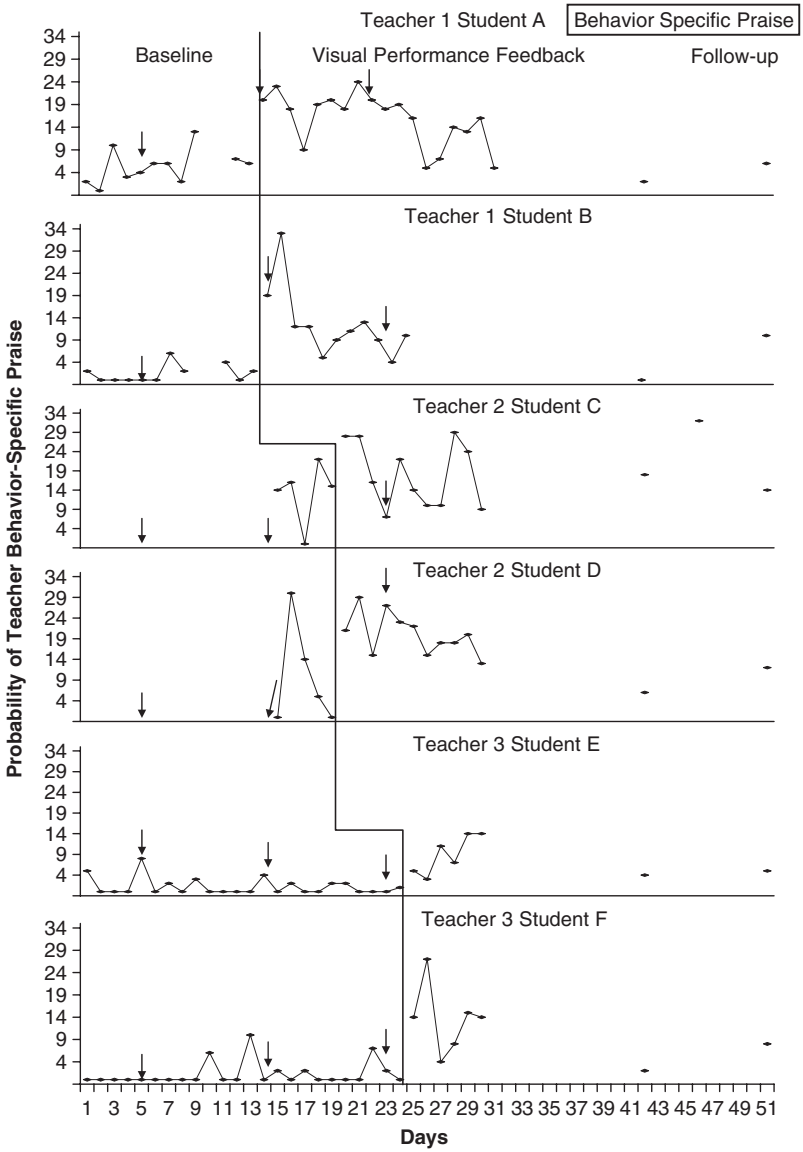
Follow-up data were collected across 2 weeks in the classrooms 1 month following completion of the VPF phase. The teachers were no longer receiving daily VPF on their use of behavior-specific praise during this data collection period. The purpose of these observations was to determine if teachers maintained changes in their behavior without ongoing intervention.

Results

Teacher Behavior

The probability of teacher-provided behavior-specific praise for participating students is shown in Figure 1. The probability of teacher behavior-specific praise was calculated by dividing the number of intervals the teacher

Figure 1
Probability of Teacher Behavior-Specific Praise for Participating Student Academic Engagement



was observed providing behavior-specific praise during an interval the student was academically engaged by the total number of intervals the student was observed as academically engaged. All three teachers had relatively low use of behavior-specific praise prior to VPF, despite the group consultation meeting focused on increasing use of behavior-specific praise with the participating students. The use of behavior-specific praise increased across teachers when VPF was introduced.

Teacher 1 and Teacher 3 had fairly stable data with no specific trends at baseline. Teacher 2's use of behavior-specific praise was more variable with both participating students. However, with Student D, Teacher 2 displayed a clear downward trend prior to phase change. All three teachers evidenced an immediate initial increase in level when VPF was introduced. Following 2 days of VPF, Teachers 1 and 2 showed a downward trend. Teacher 3 evidenced a slight upward trend with use of behavior-specific praise during the VPF phase. Teacher 2 continued to implement behavior-specific praise variably, particularly with Student C. At follow-up, a decrease in use of behavior-specific praise was noted for all three teachers.

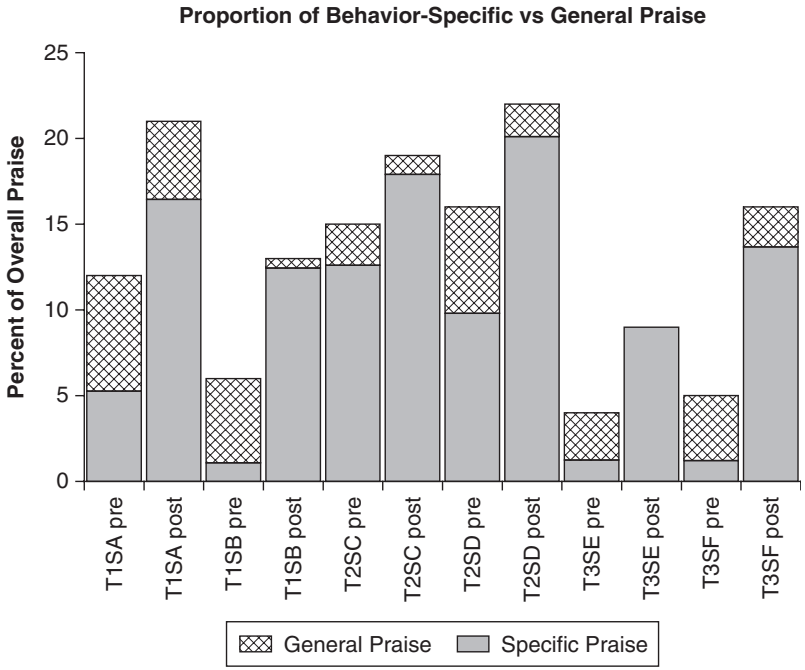
The three group consultation meetings were marked with arrows in Figure 1. There is no evidence that these meetings increased the teacher participants' use of behavior-specific praise. An initial increase in behavior-specific praise was noted for Teacher 3 with Student E after the first meeting, but this increase did not last for more than 1 day.

Teacher use of general praise was also collected. The proportion of behavior-specific versus general praise is displayed in Figure 2. All three teachers evidenced an increase in their mean use of behavior-specific praise during the VPF phase, as well as an increase in mean use of praise overall. Teacher 2 had the smallest increase in use of praise but also had the highest rate of praise across participants during baseline.

Teacher Behavior And Peer Comparisons

The mean probability of teacher behavior-specific praise toward the participating students and classroom peer comparisons are displayed in Table 1. Across all teachers the mean level of behavior-specific praise provided to peer comparisons increased during the VPF phase. Additionally, the proportion of behavior-specific praise for peers in the same classroom as the participating students increased during the VPF phase (see Figure 3). Teacher 3 increased both overall praise and proportion of behavior-specific praise toward classroom peers. Teacher 1 evidenced a decrease in use of overall praise toward Peer B but had a significant increase in use of behavior-specific praise with peers during the VPF phase.

Figure 2
Proportion of Behavior-Specific Versus General Praise Across Phases for Participating Students



Student Behavior

The mean percentage of student disruptive behaviors for both the participating students and peer composite comparisons are displayed in Table 2. The percentage of student disruptive behavior was calculated by dividing the total number of intervals per observation the student was observed as exhibiting disruptive behavior by 60 (the total number of intervals per observation). During the baseline phase, the mean percentage of disruptive behavior for participating students ranged from 14% to 33%, whereas the range of disruptive behavior observed for peer comparisons during baseline was 7% to 20%. Disruptive behavior for the participating students and

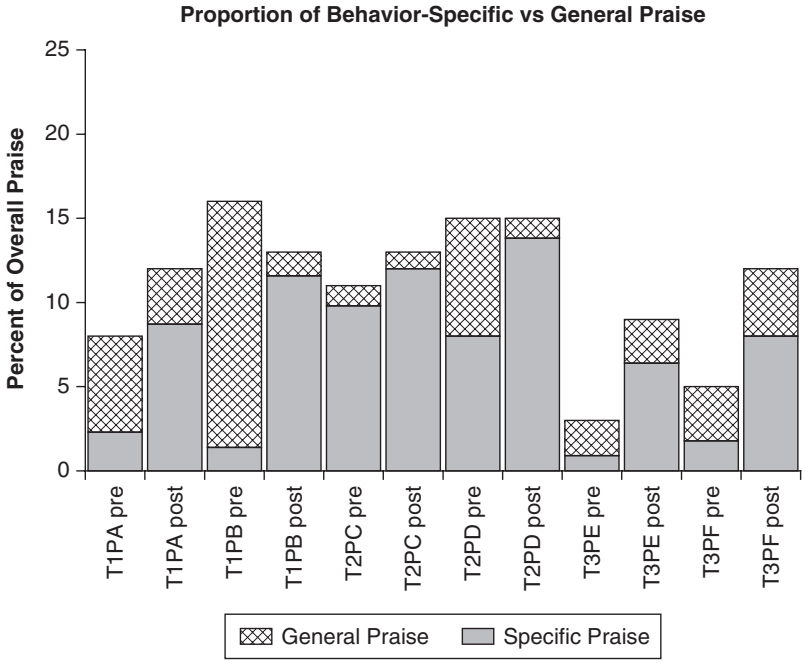
Table 1
Mean and Range of Probability of Teacher Behavior-Specific Praise Across Phases for Participating Students and Peers

	Baseline		Performance Feedback	
	Mean	Range	Mean	Range
Teacher 1, student A	5.27	0 to 13	16.44	5 to 24
Peer comparison	2.30	0 to 6	8.71	0 to 23
Teacher 1, student B	1.09	0 to 6	12.45	4 to 33
Peer comparison	1.40	0 to 6	11.58	2 to 33
Teacher 2, student C	12.60	2 to 22	17.91	7 to 29
Peer comparison	9.80	0 to 18	12.00	2 to 33
Teacher 2, student D	9.80	0 to 30	20.10	13 to 29
Peer comparison	8.00	0 to 30	13.82	0 to 29
Teacher 3, student E	1.25	0 to 8	9.00	5 to 14
Peer comparison	0.91	0 to 5	6.40	0 to 14
Teacher 3, student F	1.21	0 to 10	13.67	4 to 27
Peer comparison	1.78	0 to 9	8.00	2 to 22

Table 2
Mean Percentage of Student Disruptive Behaviors Across Phases

	Baseline		Performance Feedback	
	Mean	Range	Mean	Range
Classroom 1				
Student A	21.20	8 to 50	14.19	3 to 42
Peer comparison	16.80	0 to 42	4.50	0 to 17
Student B	26.30	8 to 57	17.67	3 to 38
Peer comparison	19.78	2 to 33	16.67	0 to 35
Classroom 2				
Student C	27.20	10 to 58	19.82	2 to 52
Peer comparison	7.20	0 to 25	4.72	0 to 15
Student D	13.60	8 to 18	8.45	0 to 35
Peer comparison	16.60	2 to 20	14.64	7 to 27
Classroom 3				
Student E	32.90	0 to 80	17.20	3 to 40
Peer comparison	14.17	0 to 63	6.00	2 to 20
Student F	20.91	2 to 60	8.20	2 to 13
Peer comparison	12.96	0 to 60	11.60	3 to 22

Figure 3
Proportion of Behavior-Specific Versus General Praise Across Phases for Peer Comparisons



peer comparison students decreased during the VPF phase. During the VPF phase, the mean percentage of disruptive behavior observed for participating students ranged from 8% to 20%. The range for disruptive behavior observed for peer comparisons was similar to participating students, ranging from 5% to 17%.

Social Validity

Participating teachers were asked their view on the social validity of the consultation meetings, VPF, and using behavior-specific praise. All teachers felt the intervention was very important, very effective, and very

positive. Additionally, all but one teacher felt that the intervention was not intrusive, with the one teacher rating the intervention as somewhat intrusive. Overall, the participating teachers rated the experience to be important and rewarding.

Discussion

This study assessed the relative effects of the use of VPF on teacher use of behavior-specific praise. Results indicated that during baseline, the three participating teachers had low and inconsistent use of behavior-specific praise. This was observed to continue even after all three teachers were provided a brief group consultation meeting that focused on increasing their use of behavior-specific praise for the participating students. In fact, the data indicate that the group consultation meetings had no significant or lasting effect on teacher behavior across classrooms. This is consistent with previous research studying the impact of traditional consultation on teacher behavior (Mortenson & Witt, 1998; Noell, Witt, Gilbertson, Ranier, & Freeland, 1997; Witt, Noell, LaFleur, & Mortenson, 1997).

Introduction of VPF resulted in an increase in levels of behavior-specific praise for all three teachers, although the effects were variable for Teacher 2. After an initial increase in use of behavior-specific praise for Teacher 1 and Teacher 2, a downward trend was noted. Teachers were provided VPF daily and although this may have been effective initially, the novelty of the intervention may have decreased over time, producing less significant outcomes. Future research is needed to assess the impact of less frequent VPF such as weekly (see Noell et al., 2005) or daily performance feedback at the onset of an intervention followed by less frequent feedback after a period of stability. Identifying the optimal dosage of performance feedback may also have the added benefit of increasing the cost-effectiveness of the intervention.

Additionally, researchers could investigate the differential effects of specific types of performance feedback (e.g., visually graphed, verbally delivered, written feedback, feedback by e-mail, combinations of types). Future research could ask teacher participants what style of performance feedback they would like and then use an ABAB single-subject design, providing teachers with preferred and disfavored forms of performance feedback to evaluate differential effects.

Of particular interest in this study, teachers increased their use of behavior-specific praise with participating students and with other students in the same classroom. In most cases, teacher use of behavior-specific praise and teacher overall use of praise increased with classroom peers. The results

indicate that the intervention, meant to target the participating students, evoked an increase in use of behavior-specific praise across all classroom students. This is an exciting finding given that at no time did the teacher know when or which classroom peers were being observed, suggesting the possibility that the increase of praise was classwide.

Observations were not conducted across instructional topics, outside of the classroom context (e.g., playground, cafeteria), or when the participating students were not present. Future research interested in examining generalization of intervention effects should collect this type of data to assess whether the effects transfer across instructional activities, settings, and classroom student composition.

Additionally, finding ways to sustain interventions in the classroom are important next steps. The follow-up data from this study indicated that despite increases in use of behavior-specific praise during the VPF phase, teachers did not continue use at the same level once performance feedback ceased. Perhaps changes in student behavior were not dramatic enough to maintain the effort exhausted in providing additional praise or perhaps the teachers felt that they had continued to use behavior-specific praise at appropriate levels. Future research in consultation with teachers should focus on innovative ways to identify the barriers and difficulties found in continued use of effective interventions.

Social validity information was collected from the participating teachers. This information is important when considering potential barriers to interventions being implemented with high integrity. If a teacher does not feel comfortable with an intervention or does not believe the intervention to be important, he or she is less likely to implement such an intervention in his or her classroom (Gresham & Lopez, 1996). For this study, the social validity information collected indicated that despite the fact that the participating teachers felt that using behavior-specific praise was important, effective, and positive, they had difficulty increasing their use of behavior-specific praise without VPF. It is possible that the participating teachers believed that they were increasing their use of behavior-specific praise but, without VPF, were not assessing their own behavior accurately.

Performance feedback may enhance intervention implementation through reinforcement, increasing the match between perceived behavior and observed behavior, and building fluency in use of the behavior. In other words, VPF indicating that rates of behavior-specific praise had not increased from baseline may have negatively reinforced teacher behavior by creating an aversive situation, thus increasing the likelihood of behavior-specific praise. As rates increased, teacher behaviors were positively

reinforced to maintain the increase in behavior-specific praise while allowing the teachers to become more fluent using behavior-specific praise. It is probable that the combination of negative and positive reinforcement of the behavior led to greater change during the VPF phase. However, this study did not obtain teacher self-report of treatment integrity; thus, it is unclear if the teachers perceived themselves to be increasing their use of behavior-specific praise prior to receiving performance feedback. Future research should consider collecting self-report of treatment integrity alongside direct assessment of treatment integrity (i.e., actual use of interventions). More information could lead to a better understanding of the consultation process and treatment integrity issues.

It is important to note the limitations of the study. Implications of these findings are difficult to discern because of the limited data points for Teacher 2. Because of the presence of a student teacher in the classroom for the first 14 data points, the data were dropped from the analysis. The data collected during this period of time did not represent the behavior of a single teacher and therefore could not be used as a comparison across teachers. Field-based applied studies are often presented with limitations such as this. However, available data provide preliminary evidence of an effect for VPF across all three teachers.

Furthermore, whereas disruptive behavior decreased across all six participating students, student behavior did not change substantially. Ceiling and basal effects may have contributed to the modest changes in participating student behavior because the participating students had relatively low disruptive behavior despite being identified by the participating teachers as disruptive. Studies in classrooms with students exhibiting slightly higher levels of disruptive behaviors would likely find more dramatic changes on student behavior.

Nonetheless, behavior change was observed across participating students, the targets of the intervention, and classroom peers, who were not targeted. The collection of peer data is important when discerning effects of interventions because the data can, in addition to assessing the degree to which the participating students behave similar to typical peers, provide information on the collateral effects of an intervention. Preliminary findings indicate that teacher rates of behavior-specific praise increased during the VPF phase for both the participating students and classroom peers. In conjunction, disruptive behavior decreased during the VPF phase for participating students and peers.

With limitations in mind, the most important finding in this study is that performance feedback, even without consultation contact, may increase

intervention integrity when levels of targeted intervention behaviors are low following initial training or consultation. This finding supports past research on the differential effects of consultation on teacher behavior (Jones et al., 1997; Noell et al., 1997; Witt et al., 1997) by investigating the additive effects of performance feedback. In addition, using peer comparison data allowed for some preliminary findings regarding the collateral effects on classroom peers of an intervention targeting specific students. Few studies have investigated the effects of interventions on other students in the classroom. All students need positive attention from teachers, and this study provides some evidence that teachers increased their rate of praise for other students as well as the participating students. The findings are promising, given that school-based consultation needs to be effective and efficient; positive collateral effects across students are indicative of both.

Classroom environments play a pivotal role in the lives of children. With growing numbers of students exhibiting behavior problems in the classroom (Walker, Zeller, Close, Webber, & Gresham, 1999), teachers, particularly those lacking effective skill levels in the implementation of critical behavior management variables, need support and feedback. Evidence from this study and others indicate that training and consultation may not be enough to effectively create classroom change. The current findings suggest that school psychologists and behavioral consultants providing indirect service through teacher consultation can increase their efficacy by providing VPF. Additional research that addresses the limitations of this study is needed before generalizing these findings to other teachers and students.

References

Anderson, L., Evertson, C., & Brophy, J. (1979). An experimental study of effective teaching in first grade reading groups. *Elementary School Journal*, *79*, 193-223.

Barlow, D. H., & Hersen, M. (1984). *Single-case experimental designs: Strategies for studying behavior change* (2nd ed.). Boston: Allyn & Bacon.

Brophy, J. (1983). Classroom organization and management. *Elementary School Journal*, *83*, 265-286.

Espin, C., & Yell, M. (1994). Critical indicator of effective teaching for preservice teachers: Relationships between teaching behaviors and ratings of effectiveness. *Teacher Education and Special Education*, *17*, 154-169.

Gresham, F., & Lopez, M. (1996). Social validation. A unifying concept for school-based consultation research and practice. *School Psychology Quarterly*, *11*, 204-227.

Hall, R. V., Lund, D., & Jackson, D. (1968). Effects of teacher attention on study behavior. *Journal of Applied Behavioral Analysis*, *1*, 1-12.

Hartmann, D. P. (1977). Considerations in the choice of interobserver reliability estimates. *Journal of Applied Behavior Analysis*, *10*, 103-116.

Jones, K. M., Wickstrom, K. F., & Friman, P. C. (1997). The effects of observational feedback on treatment integrity in school-based behavioral consultation. *School Psychology Quarterly*, *12*, 316-326.

Kellam, S. G., Ling, X., Merisca, R., Brown, C. H., & Ialongo, N. (1998). The effect of the level of aggression in the first grade classroom on the course and malleability of aggressive behavior into middle school. *Development and Psychopathology*, *10*, 165-185.

March, R., Lewis-Palmer, T., Brown, D., Crone, D., Todd, A., & Carr, E. (2000). *Functional assessment checklist for teachers and staff (FACTS)*. Eugene, OR: University of Oregon Educational and Community Supports.

Mortenson, B. P., & Witt, J. C. (1998). The use of weekly performance feedback to increase teacher implementation of a prereferral academic intervention. *School Psychology Review*, *27*, 613-626.

National Research Council. (2002). Minority students in special and gifted education. In M. S. Donovan & C. Cross (Eds.), *Committee on minority representation in special education: Division of Behavioral and Social Sciences and Education* (pp. 199-203). Washington, DC: National Academy Press.

Noell, G., Witt, J., Slider, N., Connell, J., Gatti, L., Williams, K., et al. (2005). Treatment implementation following behavioral consultation in schools: A comparison of three follow-up strategies. *School Psychology Review*, *34*, 87-106.

Noell, G. H., Witt, J. C., Gilbertson, D. N., Ranier, D. D., & Freeland, J. T. (1997). Increasing teacher intervention implementation in general education settings through consultation and performance feedback. *School Psychology Quarterly*, *12*, 77-88.

Reinke, W., & Herman, K. (2002). Creating school environments that deter antisocial behaviors in youth. *Psychology in the Schools*, *39*, 549-559.

Sutherland, K., Wehby, J., & Copeland, S. (2000). Effect on varying rates of behavior-specific praise on the on-task behavior of students with EBD. *Journal of Emotional and Behavioral Disorders*, *8*, 2-8.

Walker, H., Zeller, R., Close, D., Webber, J., & Gresham, F. (1999). The present unwrapped: Change and challenge in the field of behavioral disorders. *Behavioral Disorders*, *24,* 293-304.

Witt, J. C., Noell, G. H., LaFleur, L. H., & Mortenson, B. P. (1997). Teacher use of interventions in general education settings: Measurement and analysis of the independent variable. *Journal of Applied Behavior Analysis*, *30*, 693-696.

Wolf, M. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis*, *11*, 203-214.

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