Training Teachers to Assess the Challenging Behaviors of Students with Autism Using Video Tele-Conferencing

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Abstract: We examined the effects of performance feedback provided via video tele-conferencing (VTC) on the acquisition of functional analysis procedures by six teachers. A university supervisor used VTC equipment (i.e., computers equipped with web cameras and Internet) to provide feedback to teachers learning to implement functional analysis conditions (i.e., escape, attention, and play) with students with autism. Multiple baseline designs across teacher-student dyads with embedded multi-element designs were used to evaluate the effects of performance feedback delivered via VTC on the percentage of functional analysis procedures implemented correctly. Results indicated that teachers learned to implement functional analysis conditions following training (M duration of training = 75 minutes; range = 60–95 minutes). Results were maintained for a number of weeks following the termination of performance feedback (M = 5 weeks; range = 4–9 weeks), but teacher performance declined thereafter. Video conferencing technology may provide supervisors an efficacious way to deliver performance feedback to teachers learning research-based strategies.

The Individuals with Disability Education Act (IDEA) mandates functional behavior assessment and the subsequent development of a behavior intervention plan for students with disabilities who engage in challenging behavior that threatens their educational placement, interferes with his or her learning, or the learning of classmates. (IDEA Improvement Act, 2004; IDEA Amendments, 1997; IDEA, 1990). Functional behavior assessments are critical to the treatment of challenging behavior in school settings, because behavior intervention plans are more likely to result in decreased challenging behavior when based on the results of a prior functional behavior assessment (Didden, Duker, & Korzilius, 1997; Scotti, Evans, Meyer, & Walker, 1991).

In schools, functional behavior assessments have included one or more strategies: record review, interview of the student and others, direct observation and description of challenging behavior, antecedent-behavior-consequence (ABC) analysis, checklists regarding environmental circumstances, scatter plots, functional analysis observation forms, reinforcer identification, development of hypotheses regarding the causes of challenging behavior, and experimental functional analysis (Weber, Killu, Derby, & Barretto, 2005).
These strategies require a basic understanding of the environmental antecedents and consequences contributing to the maintenance of challenging behavior, and regarding experimental functional analysis, require the assessor to implement antecedents and consequences reliably. Past research demonstrates the need for specific training to assess challenging behavior and develop effective interventions (Durand, 1999; Northup et al., 1994).

Performance feedback, lecture, video and in vivo modeling, role-play, and self-monitoring are all routinely used strategies to train teachers and staff (Demchak, 1987; Hastings, 1996; Jahr, 1998), but performance feedback receives the most attention as an effective strategy for modifying staff and caregiver behavior (cf, Alvero, Bucklin, & Austin, 2001). However, teacher preparation programs may find the delivery of performance feedback to teachers burdensome. The physical distance between teachers’ field placements and university supervisors coupled with the additional administrative responsibilities of supervisors challenges most university based teacher preparation programs to provide adequate and timely performance feedback to teachers. University supervisors may be forced to choose which skills to expertly supervise and may provide performance feedback to teachers based on the aforementioned constraints, rather than providing supervision in response to individual teacher needs (e.g., 2 hours per teacher provided in 1 hour increments across the semester). Given these types of logistical barriers, research is needed to evaluate the use of available telecommunication technologies to more efficiently deliver expert supervision to teachers learning research-based practices.

Increased consumer availability and decreased cost of such telecommunication technologies as web cameras, video teleconferencing (VTC) software, smartphones, and the increased availability of broadband Internet access may provide university supervisors innovative tools with which to better provide supervision and performance feedback to teachers learning to implement research-based assessment and intervention strategies for students with developmental disabilities. Other fields use VTC to extend the reach of specialists where shortages exist and to supervise professionals engaged in complicated tasks that require feedback, such as the delivery of psychiatric assessments (Hilty, Luo, Morache, Marcelo, & Nesbitt, 2002). Little VTC research has been conducted in educational settings or with students with disabilities. However, those studies published report positive findings in regards to the distance education of special educators (Ludlow & Duff, 2002), and the supervision of common assessments such as functional analyses (Barretto, Wacker, Harding, Lee, & Berg, 2006; Machalicek et al., in press) and preference assessments (Machalicek et al., 2009).

In the current study, we evaluated the effects of immediate performance feedback provided via consumer ready VTC equipment on six teachers’ acquisition and maintenance of functional analysis procedures. The study was carried out in three phases: baseline, intervention, and maintenance. During baseline, teachers were asked to implement functional analysis procedures, but did not receive supervisor feedback. In the second phase, a university supervisor used VTC equipment to deliver immediate performance feedback to teachers learning to implement functional analysis procedures with students with autism. In the last phase, maintenance observations were conducted to provide information regarding teachers’ short-term maintenance of functional analysis procedures in the absence of performance feedback.

Method

Participants, Setting, VTC Equipment, and Target Behaviors

Teachers. Six teacher-student dyads participated in this study. All of the teachers were female, and the majority of teachers were of Caucasian ethnicity. One teacher, Christa, reported her ethnicity as Chinese and Polish. The average age of participating teachers was 27 years of age (range = 22–32 years of age). Teachers reported a range of experiences working with students with autism spectrum disorders and related developmental disorders (M = 6 years; range = 4–10 years). Each teacher had earned a Bachelor’s degree in a field related to special education (i.e., com-
munication science disorders, psychology), and Susan had earned a Master’s of Special Education degree. Three participants (i.e., Jessica, Marla, and Christa) were enrolled in a Master’s of Special Education program at the time of the study and had previously completed a graduate seminar on the assessment and treatment of challenging behavior. None of the teachers had previously implemented an experimental functional analysis.

**Students.** Each teacher was paired with a student who engaged in challenging behavior. Susan was paired with Dakota, Reagan with Stanley, and Julie worked with Ian. Jessica implemented functional analysis conditions with Carter. Marla and Christa were paired with Ethan and Henry, respectively. Target students were 6 years of age on average (range = 5–9 years). Five of the students were Caucasian; Ian was Asian American. With the exception of Dakota, each student had received a diagnosis of autism. Dakota’s medical files indicated “autistic like tendencies” and expressive language delays. Target students engaged in a variety of topographies of challenging behavior including aggression (e.g., pinching, hitting), crying or screaming, leaving the instructional area, self-injury (e.g., hand biting), and stereotypy (e.g., hand flapping, repetitive non-word vocalizations). A comprehensive list of each student’s topographies of challenging behavior will be provided upon request from the first author.

**Setting.** All sessions were implemented in a private school serving children with developmental disabilities and autism spectrum disorders. Sessions were conducted in a classroom with instruction continuing normally for children who did not participate in the study. Between two and five non-participating students and between one and three non-participating teachers were present during the sessions. Movable screens separated the participants from the other children and teachers present in the classroom.

**VTC Equipment.** VTC was achieved using (a) one 2.0Ghz MacBook™ laptop computer connected to one external iSight™ camera, and (b) one iMac™ desktop computer with a built-in iSight™ camera. The laptop computer used in the classroom was placed on the seat of a child size chair beside the teacher. iChat™ videoconferencing software was used on both computers and iChat™ conference recording software was used to record videoconferencing sessions for data collection. Audio communication was achieved with the microphone and speakers of the laptop computer used by the teacher; the university supervisor used the iMac™ built-in microphone. Both computers were connected to a broadband Internet connection by Ethernet cable or wireless connection. The iSight™ camera has a 640X480-pixel video graphics array (VGA), auto exposure, auto focus, and video capture at 30 frames per second. The iSight™ camera used in the classroom was placed on a plastic standing mount and secured to a stationary object (e.g., windowsill, bookshelf) in the classroom so that the supervisor could view the entire assessment area. Data was transmitted via a wireless local area network (LAN) with Wi-Fi protected network access (WPN) maintained by the private school where the research was conducted to a separate LAN maintained by the university. The confidentiality of data transmission was secured through subscription to an Internet-based service providing a virtual private network (VPN) with 128-bit encryption.

**Teacher target behaviors.** Each teacher implemented 5-min functional analysis conditions (i.e., attention, play, demand) similar to conditions described by Iwata, Dorsey, Slifer, Bauman, and Richman (1982; 1994). Anticipated teacher responses for each functional analysis condition provided condition specific task analyses of teacher behaviors (adapted from Erbas, Tekin-Iftar, & Yucesoy, 2006; Iwata et al., 2000). Target teacher behaviors are reported in Table 1.

**Supervisor target behaviors.** The supervisor provided feedback according to O’Reilly and colleague’s applied behavioral supervision model (1992). Anticipated supervisor behaviors (e.g., praise, error correction, summary of performance) in response to teacher behaviors provided a task analysis of supervisor behaviors. During teacher implementation of functional analysis conditions, if a teacher made an error, the supervisor interrupted the assessment, indicated an error, and asked the teacher how she might remedy the error. If the teacher verbalized the correct action, the supervisor praised the teacher and told them to proceed. However, if the teacher verbalized
the incorrect action, the supervisor described and modeled the correct action. At the end of each functional analysis condition, the supervisor provided specific praise for procedures the teacher had performed correctly.

**Design and Procedure**

To evaluate the effects of performance feedback delivered by VTC, multiple baseline across participants designs with embedded multi-element designs were used (Kazdin, 1982).

**Baseline.** Several days prior to baseline, teachers were asked to read Iwata et al. (1982/1994) describing the procedures of an experimental functional analysis. The supervisor also provided teachers with a brief written explanation of procedural differences between Iwata et al. and the current study. To provide teachers with the maximum practice opportunities, the current study used 10 s as the duration of delivered consequences during all functional analysis conditions and inter-trial lengths. On the first day of baseline assessment, teachers were asked to implement 5-min. functional analysis conditions in a randomized sequence (e.g., play, attention, demand) with their assigned student. The supervisor verbally prompted teachers via VTC to initiate and conclude each 5-min. functional analysis condition, but did not provide further instructions or feedback during baseline. Susan and Jessica implemented three functional analysis conditions. Reagan and Marla implemented six functional analysis conditions and Julie and Christa each implemented nine functional analysis conditions.

**Performance feedback.** The supervisor provided performance feedback to teachers in real time via VTC as prescribed by an applied behavioral supervision model (O’Reilly et al., 1992). The applied behavioral supervision model consisted of error identification, error correction, and praise as described above in supervisor target behaviors. Training continued until a teacher had implemented each assessment condition with 100% accuracy over three consecutive training sessions (e.g., at least nine 5-min. sessions total). If a teacher achieved criterion performance with some, but not all of the functional analysis conditions, intervention continued only with those conditions that the teacher had not yet achieved 100% accuracy over three consecutive sessions. The training phase lasted a mean of 75 minutes (range = 60–95 min).

**Maintenance.** Maintenance data collection began one to three weeks following a teacher’s demonstration of criterion performance; data continued to be collected at weeklong intervals thereafter. During maintenance observations, teachers were asked to implement several sessions of the functional analysis conditions (e.g., play, demand, escape) with their assigned student without performance feedback from the supervisor. As in baseline, the supervisor provided teachers with verbal

**TABLE 1**

**Anticipated Teacher Behaviors During Each Functional Analysis Condition**

<table>
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<tr>
<th>Condition</th>
<th>Behavior Details</th>
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| **Attention Condition** | 1. The teacher directs student towards toys and other items.  
2. The teacher tells student what he can do (e.g., play with items) while the teacher works.  
3. The teacher sits down at place visible to student.  
4. The teacher ignores the student if they do not engage in challenging behavior.  
5. If the student engages in challenging behavior, the teacher contingently provides attention for 10 seconds. |
| **Play Condition**   | 1. The teacher directs the student towards his preferred toys and other items.  
2. The teacher engages the student in pleasurable activities and delivers attention to the student non-contingently every 10 seconds.  
3. If the student engages in challenging behavior, the teacher ignores the behavior. |
| **Demand Condition** | 1. The teacher directs the student to sit at a table.  
2. The teacher provides the student with a clear task direction.  
3. If the student does not respond within 5 seconds, the teacher re-states the task direction and uses least to most prompting to promote task completion.  
4. If the student engages in challenging behavior, the teacher immediately removes instructional materials from the table and sits with her back to the child for 10 seconds.  
5. After 10 seconds, the teacher presents the student with another task demand. |
prompts to initiate and terminate each 5-min. functional analysis condition, but did not provide further instruction or feedback. The schedule for maintenance data collection depended on individual teacher availability. Therefore, the total number of maintenance probes (M = 3.8; range = 3–6), and the number of weeks between probes varied for each teacher. For Susan and Reagan maintenance probes were obtained at one, three, four, and five weeks following training. For Jessica, maintenance probes were obtained at three, four, and five weeks following training. Maintenance probes were obtained at one, three, four, five, nine, and eleven weeks following training for Christa. For Marla, maintenance probes were obtained at one, three, and seven weeks following training. For Julie, maintenance probes were obtained at one, three, and five weeks following training.

**Interobserver Agreement, Treatment Integrity, and Social Validity**

The primary author, an advanced doctoral student in special education with board certification in behavior analysis, served as the supervisor during the three experimental phases and collected data regarding the occurrence and nonoccurrence of teacher behavior. To evaluate the efficacy of training provided via VTC, the task analyses described in Table 1 were used as checklists to evaluate teacher performance during baseline, intervention, and maintenance phases of data collection. The delivery of an antecedent teacher behavior (e.g., telling the student to play with toys while the teacher works during attention conditions) was scored as correct if the instruction occurred at the appropriate time and incorrect if the teacher failed to deliver the antecedent behavior or delivered it inappropriately. The delivery of consequences by teachers (e.g., withdrawal of instructional task for 10 s when the student engages in target challenging behavior) was scored as correct if the withdrawal of task followed challenging behavior within 5 s. The delivery of consequences was scored as incorrect if the withdrawal of instructional task did not occur following target challenging behavior or occurred 6 or more seconds after challenging behavior. Functional analysis conditions involving the non-delivery of consequences (e.g., the absence of teacher attention when students did not engage in challenging behaviors time during attention conditions) were scored as correct if the teacher withheld consequences and as incorrect if teachers delivered consequences at the wrong time.

All functional analysis conditions lasted 5-min and were recorded using iChat™ conference recording software for reliability coding. A second advanced doctoral student collected data regarding the occurrence and nonoccurrence of teacher behavior for 30% of each experimental phase. The number of correct teacher behaviors were divided by the number of anticipated teacher behaviors (Table 1) and multiplied by 100 for each functional analysis condition to obtain a percentage of correct teacher responding. Data from the two independent observers were compared for agreements and disagreements. An agreement was scored for a step of the task analysis if both observers recorded an occurrence or nonoccurrence. Any discrepancy between the observer’s scoring resulted in a disagreement for that step of the task analysis. Agreement was calculated for each functional analysis condition by dividing the number of scored agreements by the number of agreements plus disagreements and multiplying by 100%. The mean agreement score for teachers’ performance of functional analysis procedures was 97% (range = 80–100%).

The first author’s implementation of the supervision model was recorded using iChat™ conference recording software. Two advanced doctoral students independently scored 30% of intervention sessions for each teacher. This task analysis of targeted supervisor behaviors described was used as a checklist to evaluate supervisor delivery of performance feedback during intervention. Correct responses were defined as completion of a single step of the task analysis. Incorrect responses were defined as failing to complete a step of the task analysis, or inaccurately completing a step. The number of supervisor behaviors performed correctly was divided by the number of anticipated supervisor behaviors and multiplied by 100 to obtain a percentage of correct supervisor responding. Data from the two independent observers were compared for agreements and disagreements. An agreement was scored
for a step of the task analysis if both observers recorded an occurrence or nonoccurrence. Any discrepancy between the observer’s scoring resulted in a disagreement for that step of the task analysis. Agreement was calculated for each functional analysis condition by dividing the number of scored agreements by the number of agreements plus disagreements and multiplying by 100%. The mean correct supervisor implementation of the applied behavior analysis supervision model was 98% (range = 75–100%). Agreement for the fidelity of the delivery of performance feedback was a mean of 98% (range = 80–100%).

Following performance feedback teachers completed an anonymous, 14-item questionnaire aimed at assessing the acceptability and feasibility of the training. The questionnaire was designed to elicit teacher perceptions regarding the use and delivery of performance feedback by VTC (e.g., “The delivery of error correction following my incorrect performance was acceptable to me”; “The technical aspects of video tele-conferencing were effective (clear picture and sound, speed of transmission”)and teacher satisfaction with training outcomes (e.g., “I feel confident in my ability to implement functional analysis conditions with my students”). A 6-point Likert scale provided numerical ratings with “I disagree” indicating a rating of 1 and “I agree” indicating a numerical rating of 6. Teachers ranked the training procedures and outcomes, performance feedback, and the use of VTC to deliver performance feedback positively with mean ratings of 5.6, 5.2, and 5.1, respectively. The questionnaire is available upon request from the first author.

Results

Figures 1 and 2 show teacher performance during baseline, performance feedback, and maintenance phases in percentage of steps completed correctly. Figure 1 shows teacher performance for Susan, Reagan, and Julie. Figure 2 shows teacher performance for Jessica, Marla, and Christa. Each teacher implemented functional analysis conditions with relatively high, yet variable accuracy during baseline (median performance = 63.5%; range = 20–100%). Teacher implementation of functional analysis conditions (i.e., attention, escape, and play) improved with performance feedback delivered by VTC (median performance = 100%; range = 79–92%). Teachers reached the predetermined performance criteria within 19 sessions (M duration of intervention = 75 min; range = 60–95 min).

Some teachers’ (n = 3) performance of one or more functional analysis conditions improved during baseline. For example, Reagan’s baseline implementation of demand conditions improved from 20% to 40% of steps completed correctly. Similarly, Marla’s baseline implementation of attention conditions improved from 40% to 60% of steps completed correctly. Christa’s baseline implementation of both demand and play conditions improved from 60% to 80% and 67% to 100% of steps completed correctly, respectively. These findings are similar to the results of previous research evaluating strategies to train psychology students to implement functional analyses (Iwata et al., 2000). As in Iwata et al., the teachers in this study entered baseline assessment having read the methods section of Iwata et al. (1982/1994). The teachers had also likely gained some understanding of functional analysis procedures from their coursework in special education and classroom experiences. These findings suggest that the practice of research-based strategies could contribute to improved performance for some teachers. Indeed, Christa’s continued improved performance of play conditions during baseline to 100% accuracy suggests that practice of functional analysis conditions alone might improve performance for some teachers.

During the initial performance feedback session, teachers’ performance of functional analysis conditions varied. Some teachers’ performance of some functional analysis conditions showed improvement. For example, Susan implemented a baseline attention condition with 20% of steps completed correctly. During the first performance feedback session, Susan implemented the attention condition with 80% accuracy. Reagan’s performance of demand and play conditions also improved, with 20% and 33% improvement, respectively. Julie also demonstrated an immediate improvement in her implementation of demand conditions. She implemented base-
Figure 1. Intervention results for Susan, Reagan, and Julie, including baseline, performance feedback, and maintenance observations.
Figure 2. Intervention results for Jessica, Marla, and Christa, including baseline, performance feedback, and maintenance observations.
line demand conditions with 40% of steps completed correctly and subsequently implemented the same condition with 80% accuracy during the initial performance feedback session. Likewise, Marla implemented baseline attention and demand conditions with high scores of 60% of steps completed correctly. During the initial performance feedback session, Marla implemented the attention and demand condition with 100% and 80% accuracy, respectively. Christa also demonstrated improved implementation of attention and demand conditions. During baseline, she implemented attention and demand procedures with high scores of 40% and 80% accuracy, respectively. During the initial performance feedback session, she implemented the attention condition with 60% accuracy and the demand condition perfectly. These results might be explained as a continuation of upward data trends observed during baseline and suggest that some teachers’ performance of functional analysis conditions improved as the result of a variable other than the introduction of performance feedback. Alternatively, teachers’ improved performance during initial performance feedback sessions might be interpreted as the effects of teachers’ awareness of performance expectations and anticipation of planned consequences. Just before the first performance feedback session, the supervisor explained performance feedback procedures in detail to teachers. In this study, correct responses were followed by supervisor praise and incorrect or incomplete responses were followed by corrective feedback and modeling as needed. For some teachers, a statement of praise might function to reinforce preceding behavior. Thus, if teachers are aware of the availability of praise, as they were during the first initial performance feedback session, their focus on correctly implementing functional analysis procedures might have sharpened in an attempt to obtain supervisor praise.

However, teachers’ performance of other functional analysis conditions worsened during the first performance feedback session. Susan implemented a baseline demand condition with 20% accuracy, but during the first performance feedback session failed to implement any steps of the demand condition correctly. During baseline, Jessica implemented attention and demand conditions with 60% and 80% accuracy. Subsequently, Jessica implemented the same conditions with only 40% and 60% accuracy, respectively. Marla’s performance of play conditions declined from 67% of steps completed correctly to 33% of steps completed correctly. Christa responded similarly with perfect baseline implementation of the play condition, but subsequently implemented the play condition with 67% accuracy. Some researchers have explained the effects of performance feedback as negative reinforcement (Mortenson & Witt, 1998). For some teachers, corrective feedback following an error might function to punish preceding behavior. Thus, if teachers anticipate corrective feedback when they make an error, as they did during the initial performance feedback phase, their focus on correctly implementing functional analysis procedures might have increased to avoid receiving corrective feedback from the supervisor.

Teacher implementation of functional analysis conditions during maintenance observations varied. Criterion or near criterion levels of performance were maintained for the majority of teachers for four or more weeks post-intervention (median performance = 100%; range = 60–100%). Susan’s performance maintained at one, three and four weeks post intervention (median performance = 100%; range = 67–100%). Five weeks post performance feedback, her implementation of the play condition declined to 67% of steps completed correctly. Although both Reagan and Christa demonstrated below criterion performance of a functional analysis condition during the initial performance feedback sessions, criterion or near criterion performance was maintained for both Reagan (median performance = 100%; range = 67–100%) and Christa (median performance = 100%; range = 60–100%) at three, four, and five weeks post performance feedback. In fact, Christa’s performance maintained criterion level performance until eleven weeks post performance feedback, when her performance of escape and play conditions declined. Jessica’s performance maintained at three and four weeks post performance feedback (median performance = 100%; range = 60–100%). Her performance of the demand condition declined five weeks post performance feedback.
back to 60% of steps completed correctly. At one-week post performance feedback, Marla implemented all conditions, but the demand condition (60%) perfectly. At three weeks post performance feedback, Marla implemented demand and attention conditions perfectly, but her performance of the play condition worsened. However, at seven weeks post performance feedback, Marla implemented each functional analysis condition perfectly (median performance = 100%; range = 60–100%). Julie implemented all conditions with 100% accuracy at one-week post performance feedback and all conditions, but the demand condition perfectly at three weeks post performance feedback (median performance = 100%; range = 60–100%). Although the experience of an “off day” for a teacher could contribute to these variable maintenance findings, other explanations are possible. The end of the semester and school year coincided with the maintenance phase of the current study and teachers’ motivation to participate in research might have naturally waned. Additionally, the defining characteristic of the maintenance phase was the absence of performance feedback; thus reinforcement for teachers’ correct performance of functional analysis conditions might not have been sufficient to maintain criterion level performance. Given the declined performance across all teachers, these findings suggest that teachers may require additional training or booster sessions of performance feedback following intervention to maintain functional analysis procedures.

Discussion

The findings of the current study extend previous studies evaluating the use of videoconferencing in educational settings by demonstrating that videoconferencing can be used to deliver a research-based training strategy (i.e., performance feedback) to classroom teachers. Using relatively inexpensive videoconferencing equipment (i.e., computers equipped with web cameras and broadband Internet connection), a supervisor, situated in a university office, provided immediate performance feedback to six teachers learning to assess the challenging behaviors of students with autism. The supervisor also inconspicuously collected reliable performance data by watching teachers implement functional analysis in real time on a desktop computer screen. Furthermore, the performance feedback intervention was delivered within a mean of 75 minutes (range = 60–95 min) and was judged by participating teachers to be socially acceptable. This preliminary demonstration suggests that VTC may provide university supervisors with an effective way to provide instruction and feedback to teachers without being physically present. By reducing the need for face-to-face meetings, VTC may help supervisors to overcome some of the barriers (e.g., ratio of supervisors to teachers, distance between schools) to providing adequate supervision to teachers. Additionally, by making supervision more accessible, the use of VTC may assist teachers to become proficient in research-based strategies recommended by educational legislation.

Despite these initial findings suggesting that the use of VTC to deliver training may benefit supervisors and teachers, there are several considerations that require further research. In the current study, a university supervisor provided teachers with instructive models of assessment procedures and responsive feedback as they performed functional assessments with students with autism. However, the assessment and intervention process often requires teachers to interpret available data and make data based instructional decisions. For instance, an important aspect of the treatment of challenging behavior includes the development of a function based behavior intervention plan based on functional assessment results. Indeed, researchers have stressed the importance of research evaluating strategies to train teachers to implement more complex assessment procedures involving a teacher’s clinical judgment (e.g., changing the difficulty of the task presented during demand conditions) (Erbas et al., 2006; Iwata et al., 2000; Moore & Fisher, 2007; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004). Training teachers in these skills might require a combination of training strategies, including lecture, the presentation of multiple exemplars, and the use of decision-making tools. In the current study it was unnecessary to share documents or data with the teachers via VTC, but these technological functions would likely be necessary if a
supervisor were training teachers to make data
based instructional decisions. Future research
should evaluate the use of VTC to train teach-
ers to implement more complex skills, such as
the development, implementation, and evalu-
ation of a function based behavior interven-
tion plan. For instance, the intervention selec-
tion model described by Mueller, Edwards,
and Trahant (2003) might be used to train
teachers via VTC to implement a variety of
intervention procedures aimed at decreasing
challenging behavior and assess a teacher’s
ability to choose an intervention based on the
hypothesized function of the student’s chal-
lenging behavior.

Additionally, this study was limited in scope
to evaluating the effects of performance feed-
back by VTC on teacher acquisition and short-
term maintenance of functional analysis pro-
cedures with a single child. Teachers were
paired with a child who engaged in a range of
behavioral topographies with varying social
consequences maintaining their challenging
behavior. Thus, each teacher experienced dif-
f erent topographies and distributions of chal-
lenging behavior during functional analysis
conditions and experienced differential op-
portunities across functional analysis condi-
tions to deliver antecedents and conse-
quences. For instance, if teachers were paired
with a student who screamed only to escape
academic demands, the teacher would have
had fewer opportunities to implement conse-
quence procedures during attention condi-
tions. Teachers could then have difficulty im-
plementing a functional analysis with a student
who engaged in multiple topogra-
phies of challenging behavior or engaged in
challenging behavior that was maintained by
another social consequence (e.g., to obtain
attention) or multiply maintained. To better
prepare teachers for the range of challenging
behaviors they are likely to encounter in their
careers, supervisors may need to train teachers
to implement functional analysis conditions
with several students, through multiple prac-
tice opportunities or through the additional
use of case studies and role play. Future re-
search should evaluate the effects of using
VTC to facilitate the generalization of teacher
performance using such strategies as case
studies, or role-play.

Finally, although teachers rated the use of
VTC to deliver performance feedback posi-
tively and described several benefits to using
VTC, technical difficulties did occur during
training sessions. During the current study,
each teacher experienced one to two training
sessions with technical issues. Technical diffi-
culties arose when teachers or students had
inadvertently changed the settings of the com-
puter (e.g., accidentally pressing the mute
button on the computer), or when the stu-
dent’s challenging behavior affected the VTC
equipment (e.g., student throws a puzzle
piece that hits the web camera). The intrusive-
ness of VTC equipment may rely in part on
the characteristics of the target student. Dur-
ing sessions with students who exhibited more
frequent or intense challenging behavior,
teachers experienced more frequent technical
difficulties. For instance, one student
screamed during demand conditions and mo-
mentarily precluded communication between
the supervisor and teacher. In addition, each
of the six students demonstrated varying inter-
  est in the VTC equipment. The majority of
students were easily re-directed by their
teacher, but a couple of students demon-
strated more persistent interest. For instance,
one child pulled a key cover from the laptop
computer’s keyboard during the attention
condition. From the supervisor’s perspective,
these difficulties were easily prevented or rem-
edied within a few minutes by asking the
teacher to readjust or move the VTC equip-
ment (i.e., placing the web camera on a win-
dow ledge above the assessment area or mov-
ing the laptop computer beneath the table out
of the child’s sight). Of course, these difficul-
ties interrupted teacher implementation of
the functional analysis and the remedies
proved more difficult for teachers assessing
students whose challenging behaviors in-
cluded leaving the assessment area. These
aforementioned limitations should be
weighed against the benefits of using VTC to
train teachers.

Ultimately the social validity of VTC in ed-
ucational settings relies on the ability of par-
ticipating teachers to set up necessary equip-
ment and solve intermittent technical
difficulties. Whenever both face-to-face and
VTC facilitated supervision are available and
convenient, supervisors might first explain the
known benefits and limitations for each deliv-
ery method and then allow teachers to choose a delivery method. In some situations, face-to-face supervision could be easier for both the supervisor and the teacher (e.g., when target children engage in challenging behavior at a volume or intensity that precludes effective communication between the supervisor and teacher). Alternatively, supervisors may find the use of VTC welcome when field placements are spread across several cities or when teachers require frequent supervision. Future research should continue to evaluate the relative benefits and drawbacks of using VTC in educational settings to train teachers.

References


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