Written and Verbal Feedback: Comparative Effects on Rate of Behavior-Specific Praise in the Clinical Setting

Thesis

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Abstract

This study examined the comparative effects of written and verbal feedback delivered to Registered Behavior Technicians (RBTs) on their rate of behavior-specific praise (BSP) during 1:1 clinical sessions. Participants in this study included 8 RBTs (ages 20–31) and 12 clients (ages 3–7) receiving behavior-analytic services at the agency where the research was conducted. The experimenter conducted a reversal design embedded within a multiple probe to compare effects of different forms of feedback for each participant. Feedback was delivered via verbal scripts read aloud or emails sent to RBTs and was implemented immediately prior to 1:1 sessions. Data collection was suspended early due to COVID-19 and related health restrictions. Preliminary findings demonstrated that written and verbal feedback may have similar effects on increasing RBT rate of BSP. Generalization measures across varying participants were completed throughout the study. Social validity measures indicated that RBTs may prefer verbal feedback on performance. Implications for RBTs and clinical supervisors including using video conferencing, measuring individual preferences, and pinpointing direct skills for professional development are also discussed.

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Fields of Study

Major Field: Educational Studies

Specialization: Applied Behavior Analysis

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Chapter 1: Literature Review

Challenging behaviors distract both educators and students and take away from valuable instruction time (Rollin, Subotnik, Bassford, & Smulson, 2008). Additionally, the expansion of zero tolerance policies in public schools has contributed to a decrease in tolerance of challenging behavior (Leone, Mayer, Malmgren, & Meisel, 2000). In fact, students with disabilities are twice as likely to be suspended as their non-disabled peers (U.S. Department of Education, 2016). Therefore, behavior management is an essential component of education for children with disabilities. Many professionals, however, report needing support in behavior management. Rollin et al.'s (2008) Teacher Needs Survey identified minimizing distractions from negative behavior, social and emotional safety, ensuring participation, and working independently as high priority for behavior management skills.

Other educators responsible for behavior management include Registered Behavior Technicians (RBTs). An RBT is a paraprofessional responsible for implementation of behavior-analytic services, often in a direct 1:1 setting (BACB, 2020). RBTs may provide clinic- or home-based services using "individualized plans to teach functional communication, basic academics,…social skills, self-help skills, and independent play" based on verbal behavior principles, discrete trial training, and naturalistic teaching (Kadiant, 2020, para. 1). Additionally, reduction of challenging behavior is a major component of the 2nd edition RBT Task List outlining RBT duties, which includes strategies such as implementing antecedent interventions and using contingencies of reinforcement (BACB, 2018). Therefore, RBTs should be considered when developing a framework for high-quality professional development in promoting positive behaviors and decreasing challenging behavior.

Behavior Support Strategies and Specific Praise

Improving behavior with positive behavior support (PBS) may enhance individuals with disabilities' quality of life and minimize challenging behavior (Carr et al., 2002). One pillar of PBS is "the notion that the best time to intervene on problem behavior is when the behavior is not occurring" to prevent challenging behavior from occurring again (p. 9). The goals of PBS include teaching, strengthening, and expanding positive behaviors, while also reducing or eliminating episodes of challenging behaviors. Additionally, effective PBS strategies are practical and simple to implement by teachers, classroom assistants, paraprofessionals, or RBTs.

Numerous researchers have examined positive, proactive strategies contributing to classroom management (Carr et al., 2002; Simonsen, Fairbanks, Briesch, Myers, & Sugai, 2008; Sugai & Horner, 2002). Simonsen and colleagues (2008) conducted a review of more than 100 articles ranging from 1968–2006 regarding evidence-based classroom management practices. Findings indicated that there are at least 20 basic evidence-based practices for managing challenging behavior, many of which include using a continuum of strategies to acknowledge appropriate behavior. One identified strategy to increase both academic and social behaviors is the use of behavior-specific praise (BSP), defined as a positive statement when a desired behavior occurs to inform students specifically what they did well. While this review covered a wide array of classroom management skills, all studies included in the review were conducted in settings with two or more participants. Although not addressed by the authors, this indicates a need for future research in the 1:1 setting used for intensive interventions often delivered by RBTs.

One early study on the effectiveness of BSP was conducted by Madsen, Becker, and Thomas (1968). The independent variables included introduction of rules, ignoring challenging behavior, and praise for positive behavior. The researchers instructed teachers to "give praise and attention to behaviors which facilitate learning. Tell the child what he is being praised for" (p. 145). Madsen et al. noted substantial improvements in positive behaviors among the participants such as hand-raising, sitting quietly, helping the teacher, and interacting with peers following the institution of BSP. More recently, researchers have demonstrated that BSP is related to higher on-task behavior and contributes to positive classroom environments and relationships (Sutherland, Copeland, & Wehby, 2001; Sutherland, Wehby, & Copeland, 2000).

Despite the evidence of its effectiveness, BSP is still an under-utilized strategy. Jenkins, Floress, and Reinke (2015) conducted a review of praise in general education and special education settings. Findings across numerous studies indicated approval statement frequency was low for students with learning disabilities and behavior disorders, and BSP rates ranged from only 0.42-13.5 times per hour. One barrier to the use of BSP may be limited training in behavioral instruction concepts and strategies (Begeny & Martens, 2006). Therefore, consultation involving performance feedback may be an effective method to combat this lack of training (Briere, Simonsen, Sugai, & Myers, 2015).

Performance Feedback

To examine performance feedback, Fallon, Collier-Meek, Maggin, Sanetti, and Johnson (2015) conducted a review of 47 research studies published between 1960–2011. The purpose of the review was to determine if performance feedback is an evidence-based practice using What Works Clearinghouse (WWC) guidelines. Findings indicated that enough studies have been

conducted with strong and moderate evidence to determine that performance feedback may be considered an evidence-based practice. However, the authors suggested that further research should be conducted in different settings and should compare forms such as email and telephone to individual meetings as few studies of this type have been completed. Another limitation addressed was most consultees receiving feedback in the review were general education teachers, so studies of performance feedback should also be conducted with other professionals serving students with disabilities including special education teachers, paraprofessionals, and related service personnel.

Additionally, Alvero, Bucklin, and Austin (2001) conducted a review of 43 articles related to performance feedback in organizational settings. The purpose of the review was to examine components of feedback such as effectiveness, characteristics, and combinations, along with discussing the benefits and implications for researchers and practitioners. The authors found that feedback as an antecedent strategy and the use of written and graph mediums both produced consistent effects. Additional findings suggested that feedback is more effective when delivered with a goal-setting component than delivering feedback alone. One noteworthy difference between the findings of Alvero and colleagues and previous reviews of the literature is that feedback has emerged more recently as an antecedent intervention compared to a consequence. Based on these findings, the authors suggested a need for further research on determining the behavioral function of feedback and how to make feedback more effective.

Although Alvero and colleagues (2001) identified feedback as a possible antecedent intervention, researchers have generally focused on the effects of feedback either immediately following or during performance, not immediately prior (Aljadeff-Abergel, Peterson,

Wiskirchen, Hagen, & Cole, 2017). To fill this gap in the literature, Aljadeff-Abergel et al. (2017) conducted a study using an adapted alternating treatment design to examine the effects of the temporal location of objective and evaluative feedback (prior to or following intervention session) on accuracy of error correction procedures and rate of BSP statements. The researchers defined BSP as "an approval or agreement statement that referred to and mentioned a specific behavior of performance" and guided participants to provide praise for appropriate individual or group social, classroom, and academic behaviors (p. 176). Findings indicated that greater performance improvements occurred when feedback was provided immediately before the next teaching session, and multiple participants indicated they preferred this temporal location and found it effective for improving their skills. The authors indicated a need for future research with other professionals who have more experience, because their participants were undergraduate students who had expressed interest in working in behavior analysis or school psychology but were novice learners.

Written and Verbal Feedback

Although the research on feedback is extensive, most studies have focused on face-to-face feedback. The exploration of written feedback is limited, but one study conducted by Artman-Meeker and Hemmeter (2012) covered this topic. They used a multiple baseline design across behaviors to examine the effects of email feedback on classroom preventative practices. Participants included two preschool teaching teams (four total preschool teachers) ranging from 13 months to 25 years of experience. Children in the participating classroom received childcare at a university-based inclusive setting and were 3–4 years of age, and approximately 25% of children had individualized education programs (IEPs). Findings indicated a functional relation

between performance feedback and preventative practice for nearly all skills, which provided support for the use of email-based feedback. The authors also noted a need for generalization and social validity measures.

One other study completed by Gage, MacSuga-Gage, and Crews (2017) explored professional development training methods targeted to conserve time and resources. The researchers implemented a multitiered system for professional development which included didactic training on BSP as Tier 1 and a targeted intervention consisting of direct observations, goal-setting, and email feedback as Tier 2. Findings suggested that didactic training alone was not enough to increase rates of BSP and that "emailed visual performance feedback can increase teachers' use of evidence-based classroom management skills, such as BSP" (p. 249). The authors noted some limitations including delivery of training by university-based researchers instead of natural school staff, which suggests the need for a more natural environment for training.

Finally, Luck, Lerman, Wu, Dupuis, and Hussein (2018) conducted a study using a multielement design embedded within a concurrent multiple baseline design across participants to examine the effectiveness of written and verbal feedback on conducting preference assessments. Participants included six special education teachers age 26–52 and four children with autism age 4–7 in a university-based clinic. The researchers delivered a treatment package consisting of one group lecture followed by one-on-one training that included feedback immediately after each role-play session either in written or vocal form. Findings indicated that written and verbal feedback were similarly effective in training implementation of preference assessments, and teachers tended to prefer one verbal feedback over written. However, the

authors noted a need for further research comparing written and verbal feedback with different skills or procedures, as well as on the maintenance and generalization of skills.

In summary, BSP is an effective behavior management skill (Simonsen et al., 2008), yet the rate of BSP statements among practitioners is still below desired rates. Numerous studies have demonstrated that performance feedback may be an effective method for training (Aljadeff-Abergel et al., 2017; Alvero et al., 2001). However, there is limited research outside of special education classroom settings and few studies that utilize written or email feedback (Aljadeff-Abergel et al., 2017; Artman-Meeker & Hemmeter, 2012; Luck et al., 2018). Therefore, the purpose of this study was to examine the effectiveness of feedback on RBT rate of BSP in the applied clinical setting when written feedback or verbal feedback was provided.

Research Questions:

1) What are the comparative effects of providing feedback in written form versus verbal form on RBT rate of BSP?
2) What method of feedback is preferred by RBTs?

Chapter Two: Method

Participants

The primary participants for this study included 8 RBTs at a behavior-analytic service agency (see Table 1). The mean age of participants was 23.5 (range: 20–31). Most of the participants identified as female (87.5%). The mean duration of experience at the agency was 1 year, 3 months (range: 7 months to 2 years, 10 months).

The inclusion criteria for RBT participation was they must (a) currently maintain their RBT credential with the BACB, (b) work at the behavior-analytic service agency, (c) provide direct services to children in-home or at the clinic, and (d) provide consent to participate. Exclusion criteria included (a) having a high cancellation rate for sessions, determined by averaging more than one day of cancelled sessions per pay period with less than 24-hour notice and (b) currently being on a work-improvement plan through the agency. Participants were recruited primarily through emails to the agency mailing list outlining the opportunity to participate in training and professional development. Some RBTs were recommended by supervisors following the recruiting email and were individually contacted to participate based on recommendations and scheduling needs.

The secondary participants for this study included 12 children ages 3–7 (see Table 2). The mean age of child participants was 5.1 years. All participants had a diagnosis of autism spectrum disorder (ASD), and 4 of the children had additional identified diagnoses related to development (e.g., attention deficit hyperactivity disorder). The inclusion criteria for client participation was they must (a) currently receive direct behavior-analytic services from the agency, (b) receive services from at least one RBT participant in the study, (c) receive at least

one 1:1 session per day, and (d) have a parent or guardian provide consent to participate. Exclusion criteria was having a high cancellation rate for sessions, determined by averaging more than one day of cancelled sessions per pay period with less than 24-hour notice.

Setting

This study took place through a behavior-analytic service agency located in central Ohio. All sessions occurred in the child's home or agency clinic during a 1:1 session delivered by the RBT. Ryan's sessions occurred exclusively in the clinic, as well as one of Graham's four total sessions and one of Emily's 10 total sessions. The home or clinic setting varied for each child, but all included a small table and child-sized chairs in the primary therapy room. Augmentative alternative communication (AAC) devices were available for Ryan and Chelsea. Additionally, each setting offered assorted leisure activities for the child, including but not limited to books, puzzles, dress-up clothes, coloring materials, play-doh, and other small manipulatives. Varying supports visible in the room and used throughout the sessions included visual schedules, first-then visuals, token boards, etc. per the individual's therapy plan. Sessions regularly moved throughout the therapy room and throughout the home or clinic over the course of the observation.

Experimenters

The lead experimenter for this study was a special education Masters student at The Ohio State University and a Senior RBT at the research setting. As a Senior RBT, she implemented direct services for over two years to clients, as well as provided feedback on clinical performance to team members, trained new hires and existing team members on a variety of skills, and assisted in overseeing clinical cases at the agency. Throughout her graduate program, she also

conducted data collection for multiple research studies implementing BSP and feedback interventions. Data collection, interobserver agreement (IOA), and treatment fidelity were conducted by three graduate students in the special education department at Ohio State and one other RBT at the research setting.

Definition and Measurement of Dependent Variable

The dependent variable was the rate of BSP statements per minute. BSP was defined as a praise statement that describes a specific behavior. Behaviors included but were not limited to (a) appropriate social behaviors such as using an inside voice or asking for help, (b) appropriate session behavior such as coming to the table when instructed, and (c) correct academic behaviors such as responding correctly to a question. One example of BSP is "good job looking at me!" A non-example is "great work." This is a non-example because it does not describe a specific behavior.

The dependent variable was measured using event recording for each instance the RBT provided BSP for a child's correct or appropriate response or behavior. The rate was determined as the total number of BSP statements divided by session minutes. Data collection occurred for 25–30-minute observations. Observations and data collection were originally conducted in-person with IOA occurring either in-person or via video recording. However, throughout implementation many of the observations were completed by video conferencing to reduce the risk of experimenter and participant health related to COVID-19 recommendations.

General praise. The experimenter also conducted intermittent probes of RBT rate of general praise during baseline and intervention phases. General praise was defined as a positive statement that did not specifically address any behavior. Common examples include "good job"

and “thank you.” A non-example of general praise is “thank you for sitting at the table,” which is a non-example because it includes a positive statement and refers to the specific behavior of sitting at the table. These data were collected to examine overall praise throughout RBTs’ sessions prior to intervention and if direct training of BSP impacted the rate of general praise.

Experimental Design

The experimental design was a multiple treatments reversal design (Tunnard & Wilson, 2014) embedded within a multiple probe design (Aldi, Crigler, Kates-McElrath, Long, Smith, Rehak, & Wilkinson, 2016). The anticipated treatment design followed an A-B-A-C-A pattern with a final phase consisting of the intervention most successful for each participant (e.g., Devlin, Healy, Leader, & Hughes, 2011). The design was counterbalanced so that half of the participants received one type of intervention first and the other half received the other intervention first to avoid sequence effects (Cooper, Heron, & Heward, 2020). Each design contained three baseline phases, three intervention phases, and one maintenance phase. The final best treatment for each participant was determined by which intervention had the fewest overlapping data points with the baseline immediately preceding it.

The initial baseline phase began for each participant within the same calendar week to accommodate for scheduling needs across 8 participants. The experimenter collected a minimum of five data points for each participant until the rate of BSP was stable or steadily decreasing. After the initial baseline, the two participants with the lowest and most stable rates of BSP began intervention first, with each one beginning a different intervention. The type of intervention that each participant received first was randomly generated (e.g., Devlin et al., 2011). Each participant reversed back to baseline once the intervention phase contained three data points

(with at least one generalization observation) that were not overlapping with the baseline immediately preceding it. Participants completed the intervention package once they met mastery criteria for three consecutive sessions during the final best treatment phase. Mastery criteria for each participant was set at 1.25 praise statements per minute. This was determined by measuring the experimenter's rate of BSP across a 30-minute 1:1 session (which was 1.5 praise statements per minute) and setting the criteria slightly lower because the experimenter is an "expert" at delivering BSP.

Procedures

Baseline. RBTs may have received some informal feedback related to BSP prior to beginning the study through natural training and professional development processes within the agency. The experimental design included three baseline phases, and the procedures for each baseline were consistent. During baseline, each participant continued business-as-usual throughout their clinical sessions. Sessions varied for clients depending on their specific behavior plans, but skills commonly targeted during sessions included requesting, receptive and expressing labelling, fine motor strength, independent and social play, and functional communication. During the baseline phases, the experimenter did not provide any feedback related to the dependent variable.

Feedback Intervention. The procedures used included two different methods of feedback: written and verbal. The written feedback phase consisted of a feedback form sent via email that RBTs read on their own immediately prior to beginning their 1:1 session. The verbal feedback phase consisted of a vocal script followed by the experimenter and read to RBTs immediately prior to beginning their 1:1 session. All feedback forms and scripts contained

identical information (see Appendix B) and included (a) the definition of BSP, (b) sample situations where BSP could occur, (c) two correct examples from the RBT's previous session, (d) one non-example or missed opportunity from their previous session, (e) the RBT's current rate of BSP, and (f) reference to the participant's graph of progress. The experimental design included three intervention phases, with one written, one verbal, and one final best treatment phase with each RBT. However, due to health concerns with in-person treatments and safety requirements through the university and the state department of health, some services and sessions were discontinued, and several participants did not receive every phase of the intervention.

Generalization. Generalization was measured by observing each RBT's 1:1 session with an alternative client than the primary client with which feedback occurred. At least one generalization data point was collected for each participant in baseline and intervention phases.

Interobserver agreement. IOA were collected using an exact count per 1-minute interval formula (Cooper et al., 2020). Data were collected via direct observation in person and video recorded sessions (see Appendix C). Data collectors participated in training prior to beginning the study. This training included reviewing the operational definition for BSP, observing mock sessions of 3–10 minutes to calculate agreement, discussing any disparities among data collection, and completing at least 3 observations with higher than 90% agreement.

Treatment integrity. A treatment integrity checklist was created that detailed each part of the performance feedback sessions. A checklist was created for both verbal and written feedback conditions (see Appendix D). The data collector observed the experimenter and placed a check mark in the "yes" column when the experimenter completed a step with fidelity and "no" if the step was not completed with fidelity. Percentage was calculated by adding the number of

steps completed correctly, dividing by the total number of steps, and multiplying by 100. Treatment integrity was collected during all sessions for which IOA were collected.

Social Validity

To measure social validity, one participant completed a questionnaire upon completion of the study (see Appendix E). Only one participant could complete the questionnaire as she was the only RBT to receive both types of feedback (written and verbal). This questionnaire contained a rating scale (1 = I disagree to 4 = I agree) with 12 questions related to the goals, procedures, and outcomes of the study (Wolf, 1978).

Chapter Three: Results

This chapter contains results of the study, including IOA results, treatment integrity results, the effect of various forms of feedback on RBT rate of BSP, and social validity results.

Interobserver Agreement

IOA data were conducted on a total of 35% of sessions (range: 24–71%). Mean IOA was 92% agreement (range: 70–100%). The mode occurrence was 97% accuracy. See Table 3 for breakdown by participant.

Treatment Integrity

Treatment integrity data were collected during all sessions for which IOA data were collected, a total of 35% of sessions (range: 24–71%). This consisted of 13–71% of baseline sessions and 20–67% of intervention sessions completed across participants. The experimenter conducted the treatment with 100% fidelity across all observations.

RBT Behavior-Specific Praise Rates

All participants who received any portion of the intervention package demonstrated an immediate change in level of BSP rate per minute compared to their baseline sessions prior to implementing the intervention (see Figures 1 and 2). The mean change in rate of BSP between the last initial baseline observation and first intervention observation was 0.67 (range: 0.33–1.13). Additionally, only one participant had any overlapping data points between her initial baseline and first intervention phase (see Figure 2).

Grace. Figure 1 contains Grace's results related to behavior-specific praise (BSP). Grace was the only RBT able to participate in the second baseline and second intervention phase of the experiment. Her mean rate during baseline 1 was 0.39 (range: 0.13–0.53) BSP statements per

minute. Grace received verbal feedback as her first intervention phase, which was implemented after her baseline showed a decreasing trend, and her mean rate increased to 0.98 (range: 0.90–1.03) statements per minute. After three observations, Grace showed an increasing trend with low variability and did not have any overlapping data points between baseline and intervention, therefore the intervention was withdrawn for her second baseline phase. However, during this baseline phase, she maintained a high rate of BSP for a mean rate of 1.18 (range: 0.73–1.97) statements per minute. Grace remained in this baseline phase for seven observations to allow for at least three observations in the video conferencing condition before introducing her second intervention phase. Once the baseline was on a decreasing trend, the written feedback intervention was implemented. Grace's rate of BSP increased again during this intervention for a mean of 2.41 (range: 2.11–2.72) statements per minute, surpassing mastery criteria of 1.25 praise statements per minute, and had an increasing trend during the two sessions completed. Additionally, Grace demonstrated approximately equivalent performance during generalization observations with a second client.

Rob. Rob's mean rate during baseline was 0.26 (range: 0.03–0.47) BSP statements per minute (see Figure 1). Baseline was relatively stable and on a slightly decreasing trend when Rob received verbal feedback as his first intervention phase. During intervention, his mean rate increased to 1.68 (range: 1.27–2.50) statements per minute. Rob reached mastery criteria during the observation following his first feedback session and achieved a large increase in level during intervention. Rob's third intervention session was conducted via video conferencing, and data collection stopped after completing the first intervention phase. Rob also demonstrated

performance with a stable trend during generalization observations in both baseline and intervention phases.

Shannon. Shannon's mean rate during baseline was 0.15 (range: 0.07–0.17) BSP statements per minute and this rate showed little variability (see Figure 2). Shannon received written feedback as her first intervention phase, and her mean rate increased to 0.79 (range: 0.60–1.03) statements per minute. Shannon demonstrated an increasing trend immediately upon intervention and had no overlapping data with her baseline condition. The experimenter began completing feedback sessions and observations via video conferencing earlier than the pandemic with Shannon due to the client's parents having concerns about multiple people participating in-person during his sessions, and she remained in intervention for seven observations to allow for generalization data collection and at least three observations in the remote condition prior to withdrawing intervention. Shannon did not meet mastery criteria prior to ending data collection, but her data showed an increasing trend upon discontinuation. Shannon's performance related to BSP was similar between her primary and secondary clients during her generalization observations.

Jessica. Jessica's mean rate during baseline was 0.29 (range: 0.10–0.63) BSP statements per minute. Jessica received written feedback as her first intervention phase, and her mean rate increased to 0.60 (range: 0.53–0.67) statements per minute. Jessica did not have an immediate increase in level compared to baseline, although her initial baseline showed some variability (see Figure 2). The level during intervention increased slightly compared to Jessica's baseline probe immediately prior to beginning intervention. Data collection ended after one session conducted via video conferencing. Upon visual inspection, Jessica demonstrated slightly lower performance

using BSP during her generalization sessions, but the differences between these performances are relatively small.

Additional participants. Baseline measures were collected for Molly, Beth, Kate, and Phoebe, but these participants did not receive intervention. Molly's mean baseline rate of BSP was 0.25 (range: 0.13–0.37) statements per minute. Beth's mean baseline rate of BSP was 0.56 (range: 0.30–0.83) statements per minute. Kate's mean baseline rate of BSP was 0.29 (range: 0.07–0.57) statements per minute. Phoebe's mean baseline rate of BSP was 0.23 (range: 0.07–0.37) statements per minute. Upon suspension of the study, participants received an email offering to follow up with informal training related to BSP if they were interested since they did not receive any intervention. No participants followed up about receiving additional training.

Impact of COVID-19

Four participants (Grace, Rob, Shannon, and Jessica) participated in at least one intervention phase prior to the study ending prematurely due to risk factors and administrative changes surrounding the COVID-19 pandemic. During the onset of the pandemic, six RBTs and five child participants temporarily discontinued services to self-quarantine and minimize health risks. Additionally, the agency implemented unexpected team changes per state recommendations to minimize the number of clients each RBT served daily, resulting in all remaining RBTs no longer providing services for their matched child participants. Based on these factors, the study was suspended before the remaining four RBTs (Molly, Beth, Kate, and Phoebe) could begin intervention, and Grace, Rob, Shannon, and Jessica did not receive the full intervention package.

General Praise

The experimenter conducted probes during baseline and intervention on each RBT's rate of general praise to compare to BSP. During Grace's baseline probe, the rate of BSP was 0.43 statements per minute and rate of general praise was 1.13 statements per minute. During the intervention probe (completed during her first intervention phase), the rate of BSP was 1.03 statements per minute and rate of general praise was 0.13 statements per minute. During Rob's baseline probe, the rate of BSP was 0.23 statements per minute and rate of general praise was 0.37 statements per minute. During the intervention probe, Rob's rate of BSP was 1.27 statements per minute and rate of general praise was 0.23 statements per minute. During Shannon's baseline probe, her rate of BSP was 0.20 statements per minute and rate of general praise was 1.03 statements per minute. During the intervention probe, her rate of BSP was 1.03 statements per minute and rate of general praise was 0.20 statements per minute. During Jessica's baseline probe, her rate of BSP was 0.23 statements per minute and rate of general praise was 0.70 statements per minute. During the intervention probe, her rate of BSP was 0.59 statements per minute and rate of general praise was 0.57 statements per minute.

Social Validity

The social validity questionnaire was completed by Grace, the only RBT who received both written and verbal interventions. Grace scored a "4" on the majority of items, indicating "I agree." See Table 4 for her responses by question.

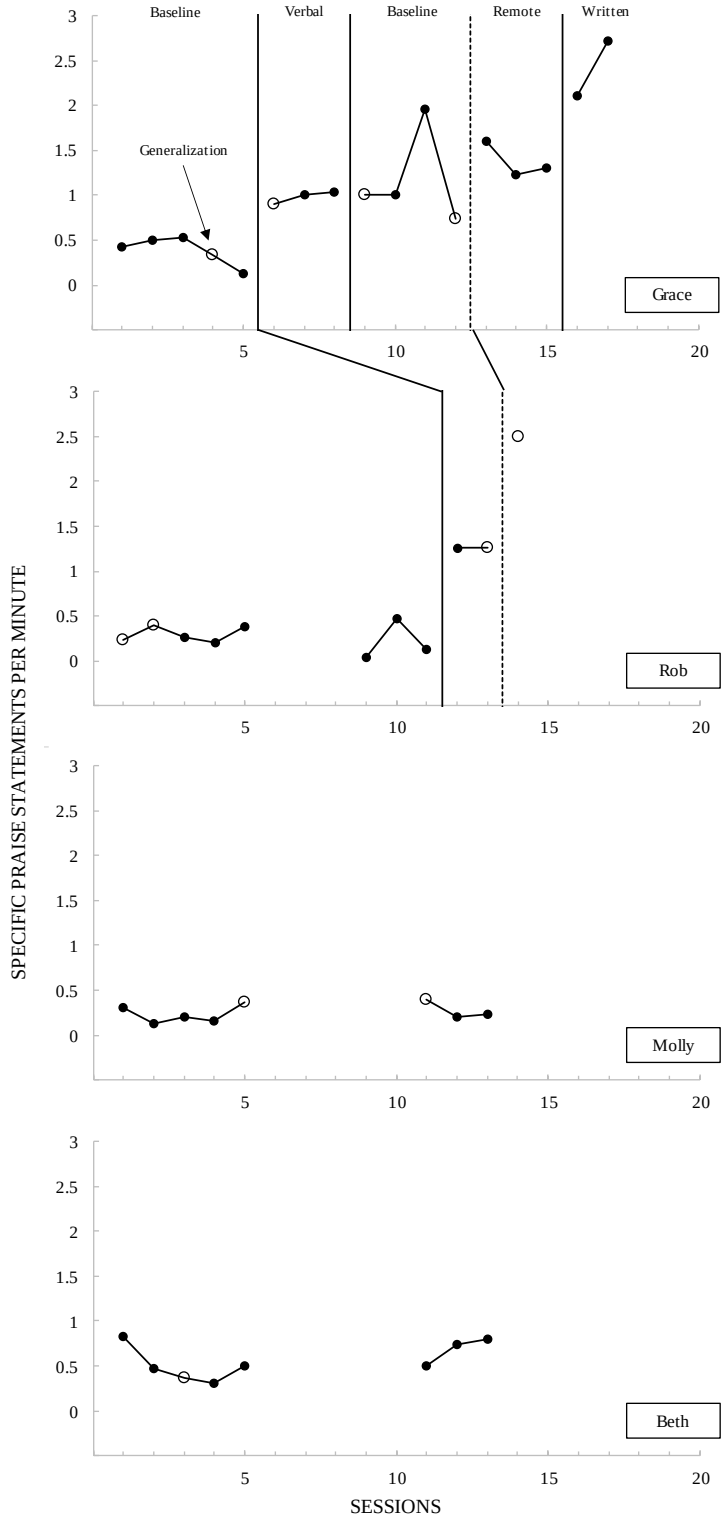

Figure 1. Results for participants assigned to verbal intervention as first intervention phase. Open markers represent generalization observations. Remote condition indicates required move from in-person to video conferencing feedback and observations.

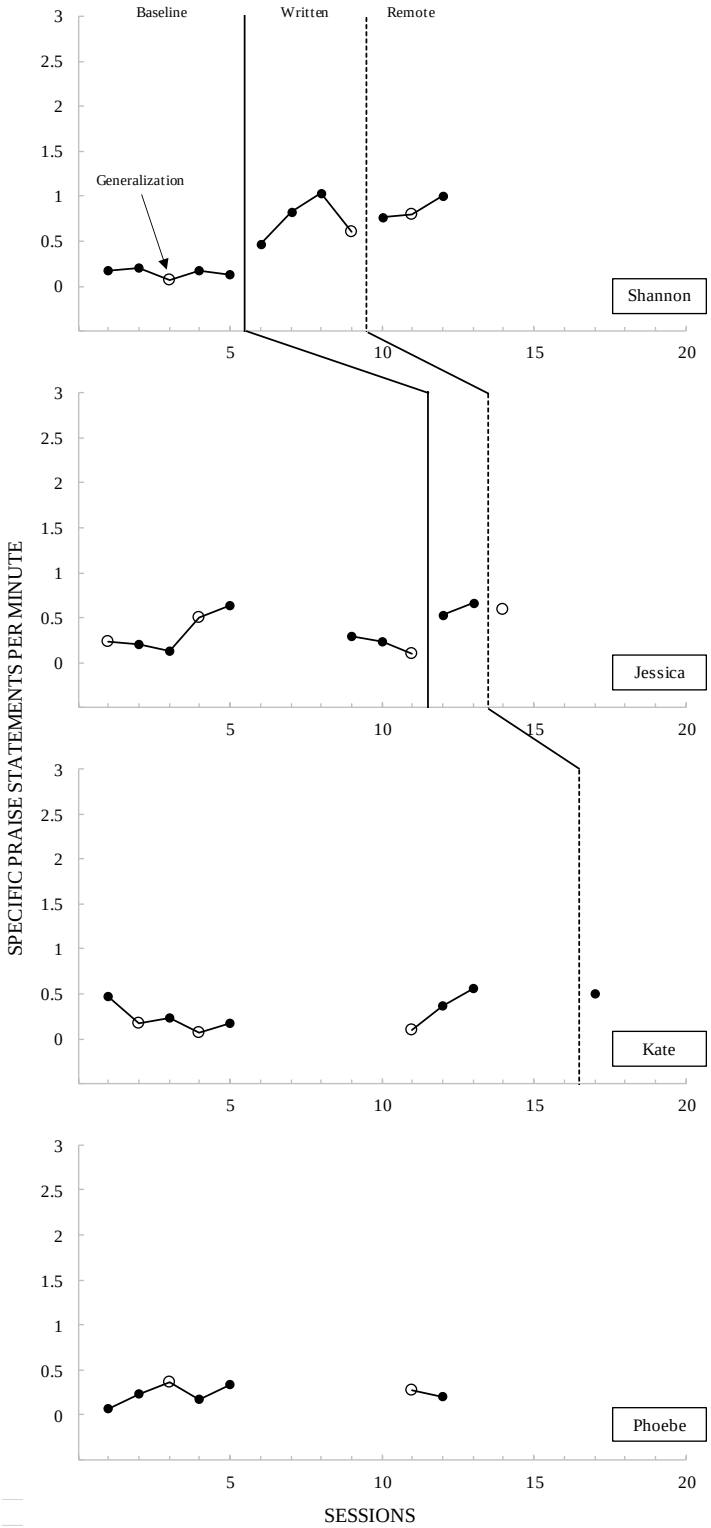

Figure 2. Results for participants assigned to written intervention as first intervention phase. Open markers represent generalization observations. Remote condition indicates required move from in-person to video conferencing observations.

Chapter 4: Discussion

This study examined the impact of verbal and written feedback on RBT rate of BSP during their clinical sessions. Although extensive research has been conducted on training professionals, the effects of feedback, and using positive behavior strategies, little to no research has specifically targeted training experienced RBTs to implement BSP using direct feedback (Aljadeff-Abergel et al., 2017; Alvero et al., 2001; Simonsen et al., 2008). Additionally, exploration of emailed feedback and comparisons of written and verbal feedback effectiveness is limited (Artman-Meeker & Hemmeter, 2012; Luck et al., 2018). Although results from the present study should be regarded as preliminary due to the early end in data collection, findings suggest that written and verbal feedback may both improve RBT rate of BSP during their clinical sessions. However, it may be important to consider RBT preferences to maximize effectiveness in training skills such as delivering BSP. Additionally, these findings have implications for future research and value for clinical practitioners which will be further discussed.

Comparative Effects of Written and Verbal Feedback on RBT Rate of BSP

Preliminary findings from the present study suggest that both written and verbal feedback may be effective methods for increasing RBT rate of BSP. Grace demonstrated a greater change in level compared to the previous baseline when receiving written intervention, but was the only participant who received both forms of intervention, so this finding could not be replicated. Grace, Rob, and Shannon all demonstrated changes in level following the first intervention regardless of their intervention form (written or verbal). Jessica was the only participant who was not noticeably responsive to intervention immediately. When comparing results across participants, Grace and Rob both achieved greater changes in level immediately following their

first verbal intervention session than Shannon and Jessica did, but Shannon overall demonstrated a greater change in level and mean rate of BSP during written intervention than Grace did during her verbal intervention. Therefore, the comparative effects appear to be variable and could not be replicated across the additional participants who remained in baseline.

Regarding general praise, all participants demonstrated a higher rate of general praise than BSP during baseline. Delivery of the intervention appears to be correlated with both an increase in BSP and a decrease in general praise, demonstrating a shift in participant praise types. This observation may be anecdotal, as only probes were completed, and no functional relation was demonstrated as a part of the study.

Although preliminary, these results indicate that both written and verbal feedback may affect meaningful behavior change. Findings on the impact of written and verbal feedback on RBT performance during their sessions aligns with Luck and colleagues' (2018), who found that both forms may be effective in training implementation of a skill. This study also expands research upon varying settings and participants as suggested by Aljadeff-Abergel et al. (2017) and implemented greater generalization measures as requested by Artman-Meeker and Hemmeter (2012).

RBT Feedback Preferences

Since Grace was the only participant who received both written and verbal intervention, she was the only RBT whose social validity results could be examined pertaining to feedback preferences. Grace indicated that written and verbal forms of feedback were effective in increasing her performance related to BSP, but rated verbal slightly higher than written when rating effectiveness. Additionally, Grace indicated a preference for verbal feedback over written

feedback. This finding similarly aligns with that of Luck et al. (2018) that while both methods may be effective, professionals may prefer verbal feedback over written.

Implications for Practitioners

Findings from this study have implications for clinical supervisors and RBTs. This study has demonstrated that both written and verbal feedback may be effective for training RBTs to deliver BSP. Therefore, clinical supervisors and other clinical leaders should use similar feedback methods related to BSP to pinpoint improvement in RBT skills during their clinical sessions. It may be valuable to examine RBT preferences prior to feedback, and then provide feedback via either written or verbal form depending on the individual RBT's preference.

Additionally, the use of video conferencing throughout this study may suggest that some RBTs are responsive to training conducted virtually. Using video conferencing as a method for brief feedback sessions and observations up to only 30 minutes may provide the opportunity for conserving resources such as supervisor time, an important factor in a field reliant on billing insurance. Clinical supervisors should attempt video conferencing and use progress monitoring for RBTs to examine if they respond to this method or may need further resources such as in-person training or more lengthy feedback sessions and observations.

Limitations and Future Research

There were several limitations in the present study which may suggest avenues for future research. Many of these limitations can be attributed to complications following the COVID-19 pandemic. Most significantly, the full intervention package was not implemented for most participants. While Grace's results may be examined for preliminary findings on the comparative effects of written and verbal feedback on rate of BSP, these findings were not replicated or

verified, therefore this study does not individually demonstrate a functional relation. Future research should continue to examine the comparative effects of written and verbal feedback to achieve more conclusive results.

Secondly, a larger portion of the study was conducted via video conferencing than initially intended. Participants responded differently to this condition, so the effects are relatively unknown. For example, Rob demonstrated a large increase in level in the remote condition of the verbal intervention and Grace's baseline and written intervention phases maintained relatively high rates when conducted via video conferencing. Comparatively, Shannon and Jessica did not demonstrate noticeable differences in level, trend, or variability in rate of BSP between in-person and remote conditions of their written intervention. Anecdotally, the experimenter found that completing observations via video conferencing may have maintained business-as-usual regarding sessions for client participants and hypothesizes that this may reduce observer effects, so future research on the application of professional development processes via video conferencing may be valuable. Future researchers might compare RBT responsiveness to and preference for virtual or in-person training sessions.

Another limitation related to the pandemic was the amount of IOA and treatment fidelity that could be completed. Some sessions were cancelled unexpectedly and some session recordings had technical difficulties, which resulted in IOA and treatment fidelity not being collected for at least 25% of sessions across each participant. Additionally, recordings were often more difficult to hear during video conferencing and the data collectors could not sync their timers exactly. This resulted in some sessions having less than 90% agreement. It should be noted that IOA were conducted using exact-count-per-interval agreement which is the most strict

form of IOA, so lower agreement compared to a less strict method may be expected. In the future when conducting observations or IOA using video conferencing, researchers should consider having RBTs wear an earbud microphone rather than using the RBT's tablet for data collection to achieve better audio quality.

Lastly, one final limitation of this study is the rate of BSP did not reverse with the withdrawal of feedback as was expected per the downward trend in practices when feedback was discontinued as Artman-Meeker and Hemmeter (2012) described. Further research might explore different research designs such as a component analysis to compare components and forms of feedback or examining different forms of feedback on various skills to compare the effect.

Conclusion

In conclusion, this study demonstrated that written and verbal feedback may have positive outcomes on RBT performance delivering BSP, and that their preferences may be important when establishing methods for professional development. Positive outcomes of the study included the immediacy and generalizability of RBT skills and implications for resource conservation using video conferencing. This research contributes to a body of literature in behavior analysis by further exploring written (and particularly emailed) feedback, expanding research in the clinical setting, and understanding effective methods for training RBTs and other paraprofessionals, which continue to be important topics as the field of applied behavior analysis grows.

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Appendix A: Tables

Table 1. RBT Participant Demographics

RBT Name	Age	Gender	Duration of Experience	Child Participants
Beth	22	Female	2 years, 10 months	Daniel, Faith
Grace	23	Female	9 months	Austin, Chelsea
Jessica	31	Female	1 year, 1 month	Emily, Graham
Kate	23	Female	11 months	Lily, Ryan
Molly	24	Female	1 year, 9 months	Matt, Austin
Phoebe	20	Female	1 year	Sean, Chelsea
Rob	23	Male	1 year, 7 months	Kyle, Ryan
Shannon	22	Female	6 months	Jack, Emily

Table 2. Child Participant Demographics

Client Name	Age	Gender
Austin	4	Male
Chelsea	7	Female
Daniel	6	Male
Emily	3	Female
Faith	7	Female
Graham	4	Male
Jack	3	Male
Kyle	3	Male
Lily	5	Female
Matt	7	Male
Ryan	6	Male
Sean	6	Male

Table 3. IOA Results

RBT	Range of agreement	Mean agreement	Total sessions completed	Mean baseline agreement	Baseline sessions completed	Mean intervention agreement	Intervention sessions completed
Grace	70–97%	88%	24%	88%	25%	97%	20%
Rob	87–97%	90%	36%	91%	38%	87%	33%
Shannon	80–100%	88%	33%	93%	40%	82%	29%
Jessica	87–93%	91%	27%	93%	13%	90%	67%
Kate	83–96%	92%	71%	92%	71%	N/A	N/A
Molly	96–100%	98%	25%	98%	25%	N/A	N/A
Beth	86–93%	90%	37%	90%	37%	N/A	N/A
Phoebe	93–100%	97%	57%	97%	57%	N/A	N/A

Table 4. RBT's Social Validity Ratings of Written and Verbal Feedback

Question		Response
1	It is important for RBTs to receive feedback to improve their sessions.	4
2	Receiving feedback on my sessions will improve client outcomes.	4
3	Specific positive praise is an effective way to improve client performance.	4
4	Receiving feedback on my rate of specific positive praise via written form was more effective than verbal feedback in increasing my performance.	3
5	Receiving feedback on my rate of specific positive praise via verbal feedback was more effective than written form in increasing my performance.	4
6	I preferred receiving feedback via written form instead of verbal feedback.	1
7	I preferred receiving feedback via verbal feedback instead of written form.	4
8	The feedback I received on how to deliver specific positive praise was effective.	4
9	I would recommend the use of feedback for specific positive praise intervention for other RBTs.	4
10	Before this study, I regularly used specific positive praise during my sessions.	4
11	Overall, increasing my rate of specific positive praise improved client performance during my session.	4
12	I will increase my rate of specific praise during my sessions as a result of this study.	4

Appendix B: Sample Feedback Form

RBT: Grace **Experimenter Initials:** SB
Date of session: 2/5/20 **Session #:** 1 IV1

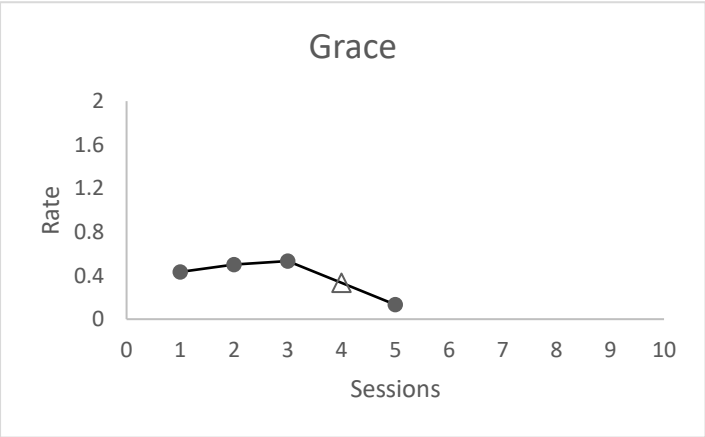
Script:

Thank you for coming to work today and working with our clients! Today, we are going to target your rate of specific positive praise during your clinical session:

- In your last session, the rate of specific positive praise you provided was: 0.133 times per hour
- Remember, specific positive praise is a praise statement that also describes a specific behavior. One example of specific positive praise is "good job looking at me!"
- You should provide specific positive praise when you see:
  - Appropriate social behaviors (such as using an inside voice or asking for help)
  - Appropriate session behaviors (such as coming to the table when instructed)
  - Correct academic behaviors (such as responding correctly to a question)
- Two examples of good specific positive praise I observed during your last session:
  1. During a transition with Austin, "good job checking your schedule!"
  2. During gross motor program, "Woohoo, great hop!"
- One non-example or missed opportunity I observed during your last session:
  1. "You're working so hard" on the balance beam; instead, could add praise statement such as "awesome job, you're working so hard!"
- This performance:

  ☐ Needs improvement

- Here is a graph outlining your progress so far (*show graph)*:



- Thank you again!

Appendix C: Behavior-Specific Praise & IOA Data Collection Form

RBT Initials: _____ Date: _____

Experimenter Initials: _____ IOA Initials: _____

Session #: _____ BL1 IV1 BL2 IV2 BL3 IV3

Count of Specific Positive Praise delivered by RBT:

Mins 0-9:										
10-19:										
20-29:										
30-39:										
Total time of lesson: _____										
Rate of specific praise per minute: _____										
IOA *if applicable*: _____										

Notes:

Examples of Use of Specific Positive Praise:	Examples of Missed Opportunities:

Appendix D: Treatment Integrity Data Collection Forms

Baseline/Maintenance

RBT Initials: _____ Experimenter Initials: _____ Observer Initials: _____
Date: _____ Session #: _____ BL1 BL2 BL3 M G Client Initials: _____

Step:	**Yes:**	**No:**	**N/A:**
1) Experimenter did not provide any feedback related to specific praise throughout entire session			
Percentage = Yes/Total x100 =			
Notes:			

Intervention – Written

RBT Initials: _____ Experimenter Initials: _____ Observer Initials: _____
Date: _____ Session #: _____ IV1 IV2 IV3 G Client Initials: _____

Step:	**Yes:**	**No:**	**N/A:**
1) Feedback form was time-stamped as "sent" within two hours of RBT's session			
2) Feedback form contained written definition of specific praise			
3) Feedback form contained sample situations of specific praise			
4) Feedback form contained two correct examples from RBT's last session			
5) Feedback form contained one non-example/missed opportunity from previous session			
6) Feedback form contained current rate of specific praise			
7) Feedback form contained image of RBT's graph			
8) Feedback form did not contain any additional elements			
Percentage = Yes/Total x100 =			
Notes:			

Intervention – Verbal

RBT Initials: _____ Experimenter Initials: _____ Observer Initials: _____
Date: _____ Session #: _____ IV1 IV2 IV3 G Client Initials: _____

Step:	**Yes:**	**No:**	**N/A:**
1) Verbal feedback session occurred within two hours of RBT's session			
2) Experimenter greeted RBT			
3) Script contained written definition of specific praise			
4) Script contained sample situations of specific praise			
5) Script contained two correct examples from RBT's last session			
6) Script contained one non-example/missed opportunity from previous session			
7) Script contained current rate of specific praise			
8) Experimenter reviewed RBT's graph			
9) Script did not contain any additional elements			
Percentage = Yes/Total x100 =			
Notes:			

Appendix E: RBT Social Validity Questionnaire

Part I: Acceptability of Intervention Goals

1. It is important for RBTs to receive feedback to improve their sessions.	1 - 2 - 3 - 4 **I disagree** **I agree**
2. Receiving feedback on my sessions will improve client outcomes.	1 - 2 - 3 - 4 **I disagree** **I agree**
3. Specific positive praise is an effective way to improve client performance.	1 - 2 - 3 - 4 **I disagree** **I agree**

Part II: Acceptability of Procedures

4. Receiving feedback on my rate of specific positive praise via written form was more effective than verbal feedback in increasing my performance.	1 - 2 - 3 - 4 **I disagree** **I agree**
5. Receiving feedback on my rate of specific positive praise via verbal feedback was more effective than written form in increasing my performance.	1 - 2 - 3 - 4 **I disagree** **I agree**
6. I preferred receiving feedback via written form instead of verbal feedback.	1 - 2 - 3 - 4 **I disagree** **I agree**
7. I preferred receiving feedback via verbal feedback instead of written form.	1 - 2 - 3 - 4 **I disagree** **I agree**
8. The feedback I received on how to deliver specific positive praise was effective.	1 - 2 - 3 - 4 **I disagree** **I agree**
9. I would recommend the use of feedback for specific positive praise intervention for other RBTs.	1 - 2 - 3 - 4 **I disagree** **I agree**

Part III: Acceptability of Outcomes

10. Before this study, I regularly used specific positive praise during my sessions.	1 - 2 - 3 - 4 **I disagree** **I agree**
11. Overall, increasing my rate of specific positive praise improved client performance during my session.	1 - 2 - 3 - 4 **I disagree** **I agree**
12. I will increase my rate of specific positive during my sessions as a result of this study.	1 - 2 - 3 - 4 **I disagree** **I agree**