March 2021

Evaluating Behavioral Skills Training to Increase the Use of Verbal Feedback with Personal Trainers

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Evaluating Behavioral Skills Training to Increase the Use of Verbal Feedback with Personal Trainers

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science in Applied Behavior Analysis
Department of Child and Family Studies
College of Behavioral and Community Sciences
University of South Florida

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Date of Approval:
March 17, 2021

Keywords: Corrective feedback, positive feedback, staff training, organizational behavior management

DEDICATION

This paper is dedicated to my life partner, my husband, Derek Beck. Thank you for supporting me and managing the household over the last two years while I heavily focused on my academic endeavors. Thank you for gracefully accepting more responsibilities of our two beautiful children. Thank you to my sisters KK and MJ for encouraging me when I did not think I could finish and being confidants and accountability partners through this journey. Thank you to C-Paw and Gigi for always being willing to step in and take care of the baby not only while we worked but while I studied, did homework, completed research, and worked so hard to graduate on time. Special thank you to my parents for always encouraging me and supporting me.

ACKNOWLEDGMENTS

I would like to thank Dr. Raymond Miltenberger for his encouragement and support throughout the process. His expertise in research and behavioral interventions guided me along the way. Thank you to Jen Cook for assistance with designing and writing the manuscript and Peigelyn Dorno for help with data collection. Thank you to mt committee Dr. Kimberly Crosland and Dr. Anthony Concepcion for all their time preparing me over the last two year for this moment. And additionally chanllengind me through my proposal and defense process.

Due to the COVID-19 pandemic the thesis requirements for students graduating from the USF ABA program in 2021 has been modified and may include fewer participants, case studies, or a literature review. This study was completed as a thesis by the first author**.**

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ABSTRACT

This study investigated behavioral skills training (BST) to improve feedback skills of personal trainers. We used a multiple baseline across participants design to evaluate the effects of BST for teaching personal trainers to provide positive and corrective feedback to their clients during various exercises within a private gym setting. In addition, we conducted observer absent observations in baseline and intervention to see if increases in the behavior occurred when the researcher was not present. Results indicated that BST was successful for both participants. Future studies should evaluate BST as a training method for personal trainers and assess its effectiveness across other skills.

CHAPTER ONE:

INTRODUCTION

In 2019, the Bureau of Labor Statistics projected the growth of the personal training industry to be 13% over the course of the subsequent ten years because the unemployment rate had fallen, and disposable income became more available to many Americans. While these projections may be less optimistic with the onset of the COVID-19 pandemic in early 2020, personal training to help individuals become more physically fit remains important because approximately 42% of Americans are classified as obese (Hales et al., 2020). It stands to reason that individuals new to developing fitness routines do not have expertise about specific skills that could potentially benefit their training experience. However, there is an abundance of behavior analytic research that has identified successful and effective coaching strategies within the area of sports. One of these strategies is feedback provided by the coaches to the athletes. Evans and Reynolds (2016) asserted that feedback can be adjusted to fit sport-specific requirements and is important to any coaching process. Feedback has been categorized as (a) positive feedback and b) corrective feedback (e.g., Codding et al., 2005; Tzetzis et al., 2008). Positive feedback occurs immediately following successful performance and involves praise (often descriptive praise) for the performance. Corrective feedback follows unsuccessful performance and consists of further instruction for improvement for the next rehearsal of the behavior. Feedback is used regularly by coaches and trainers, and studies have evaluated its effectiveness on the performance of athletes (e.g., Komaki & Barnet, 1978; Stokes et al., 2010; Tai & Miltenberger, 2017). For example,

Komaki and Barnet (1978) implemented instruction, feedback, and positive reinforcement to increase football players' correct play execution. Results showed that after intervention, the players' correct performance increased across three different plays. Additionally, results demonstrated that the intervention substantially increased the frequency of play executions that were scored with 100% accuracy.

Stokes et al. (2010) evaluated descriptive feedback, video feedback, and auditory feedback to increase offensive line blocking skills of high school football (Stokes et al, 2010). Results showed that the blocking skills acquired during intervention generalized into gameplay. Tai and Miltenberger (2017) used feedback as part of behavioral skills training (BST) to improve tackling skills with youth football players and found improvements for all participants. These studies and others across varied sport modalities show feedback is an effective strategy to increase and maintain athletic performance of athletes across all levels (Schenk & Miltenberger, 2019). Therefore, personal trainers and coaches should be well versed in providing feedback. Although a well-trained coach will frequently and systematically provide verbal feedback to their athletes, there is limited research on how to initially train coaches or personal trainers to provide this important feedback component.

Several studies have used BST to teach skills to staff across a variety of settings. Instruction, modeling, rehearsal, and feedback are the four components that comprise BST (Himle et al., 2004), and BST has been effective for teaching skills to children (Gatheridge et al., 2004; Miltenberger et al., 2004) and for training staff to conduct their job duties in instructional and human service settings (Hogan et al., 2014; Madzharova et al., 2012; Sarokoff & Sturmey, 2004, 2008). For example, Sarokoff and Sturmey (2004) used BST to train three teachers to correctly implement discrete trial teaching (DTT) for a child with Autism Spectrum Disorder.

During the instruction phase, the experimenter provided the teacher with a written copy of the procedures and reviewed each of the components. The teacher then rehearsed the skills and the experimenter provided positive and or corrective feedback to the teacher following their rehearsal. Next, the experimenter modeled the skills using the student that the teacher would be working with. The experimenter pointed out specific skills that had been completed incorrectly by the teacher during baseline and rehearsal stages. The experimenter worked with the teacher to repeat rehearsal and modeling for a training period of 10 minutes. After the training, the teacher completed trials without interruption until they reached 90% or more mastery for three consecutive sessions, showing that BST was an effective intervention for training teachers how to implement DTT.

Sarokoff and Sturmey (2008) also demonstrated that BST was effective for training staff at a school for children with autism to use DTT. Furthermore, they showed the skills generalized and maintained over time. During baseline, staff implemented fewer than 50% of DTT steps correctly but following intervention, staff correctly implemented near 100% of DTT steps. This study also assessed the skills during generalization and follow-up, when the participants continued to demonstrate the skills at near 100%.

Madzharova et al. (2012) found similar results when they used BST to train teachers to teach students peer-to-peer manding. The experimenter provided instructions using a task analysis, modeling using various videos on the correct implementation of the task analysis, and rehearsal which involved the experimenter role playing the student and the participant attempting to implement each of the steps. The experimenter provided feedback on how well the participant displayed the skills during the rehearsal phase and answered any questions that the participant had about the procedure. The training phase continued until the participant scored 90% or better

during three consecutive sessions. Results demonstrated a substantial improvement in the participants' ability to teach peer to peer manding. These results provided additional data supporting BST as an effective method to train teachers and school staff.

In another study demonstrating the effectiveness of BST, Hogan et al. (2014) trained staff working at a private school for kids with autism to complete behavior intervention plans (BIP). During baseline, staff were provided with instructions in the form of a task analysis including the expected BIP components but could not ask questions and were not provided feedback while they attempted to implement the steps. For the training phase, the experimenter modeled the correct procedures for the BIP and provided feedback to the staff following their implementation of the BIP steps. The process of rehearsal and feedback was repeated until staff reached mastery criteria of 90% across all components for three consecutive observations. All staff reached 90% or greater accuracy on the implementation of the BIP after the intervention phase.

Although BST has been highly successful for teaching skills to staff in instructional and human service settings, there is limited research on the use of BST to train coaches in specific skills. Because feedback has been an effective intervention to use in sports (Allison & Ayllon, 1980; Anthony et al., 2017; Stokes et. al., 2010), teaching coaches to implement feedback successfully should be an important focus for sports research. Notwithstanding the lack of evidence to support BST to train athletic trainers, the research literature in staff training within human services suggests it would be an effective procedure for teaching trainers how to provide frequent feedback. The purpose of this study was to evaluate BST for training personal trainers how to provide feedback during training sessions at a gym. Specifically, trainers were taught to provide positive or corrective feedback to trainees for exercise performance. Subsequently, the trainers' use of feedback was assessed during professional training sessions with clients. A

secondary purpose of this study was to evaluate if the same levels of feedback persisted in professional sessions when trainers were unaware, they were being observed. Because some research has suggested that staff members are more likely to implement their duties when they know they are being observed (Brackett et al., 2007; Mowery et al., 2010), this study also evaluated the potential for reactivity to the presence of the researcher.

CHAPTER 2:

METHOD

Two personal trainers participated in this study. Each participant held a relevant certification as a personal trainer. AJ was a 27-year-old male personal trainer and the head football conditioning coach for the gym. AJ worked at the gym for 5 years prior and held a NASM personal training certification for 5 years as well. He also coached the 10th-grade boys' basketball team that was sponsored by the gym. Jay was a 50-year-old female personal trainer who worked at the gym for 4 years and held a NASM personal training certification for 16 years. She primarily worked with volleyball players and female clients who were working to lose weight and gain lean muscle. The gym was a privately owned facility, consisting of three training rooms, a bathroom, an office space, and a reception area**.** Training sessions took place in a 9.1 m x 6.1 m free weight room featuring multiple weight racks with Olympic barbells, dumbbells of various weights and sizes, and a total gym.

Data Collection and Target Behavior

The target behavior was percentage of feedback delivered out of the total opportunities to provide feedback. Broadly, feedback is defined as one or more positive or corrective comments from the personal trainer within 5 s after the skill is demonstrated (correctly or incorrectly) by the trainee. Specifically, positive feedback is any one or more praise statements provided by the trainer within 5 s after the skill has been demonstrated correctly. Positive feedback occurs only when provided without additional qualifiers, not in conjunction corrective feedback provided at

the same time. Corrective feedback consists of a directive or corrective statement provided by the trainer within 5 s after the trainee demonstrates the skill incorrectly. Corrective feedback may or may not include positive feedback. The researcher will record each execution of the skill by the trainee, and whether the trainer provided positive or corrective feedback after each skill execution. The percentage of opportunities for feedback was calculated by dividing the number of instances with feedback (positive and corrective) after a skill is completed by the total opportunities to provide feedback (i.e., every instance after a skill is completed) for each observation period. Each session will be video recorded, and in vivo or post hoc data will be collected.

The assessment session began after the trainer provided initial instructions for the trainee to engage in some form of exercise and the trainee began to engage in repetitions of the exercise. Some examples of training exercises included sled pushes, air squats, and box jumps. Sled pushes occurred in the speed room and consisted of the trainee bending their torso at a 45 degree angle, placing both their hands on the sled handles, then driving the ball of their foot into the ground to run, while pushing the sleigh across the room for approximately 18 m. Air squats occurred in the strength room, where the trainee began the exercise with their feet slightly wider than shoulder width apart with their arms straight out and parallel to the ground. The trainee then squatted down until their buttocks were parallel with the ground and their legs were at a 90-degree angle. Box jumps were completed in the vertical studio. A box jump consisted of a trainee standing with their feet slightly wider than shoulder length, in front of a 60 cm box. The trainee then jumped onto the box, landing in a half squat position.

Interobserver Agreement

To calculate interobserver agreement (IOA), a trained secondary observer independently collected data. Interobserver agreement was calculated by dividing the number of agreements (both observers agreed that positive feedback, corrective feedback, or no feedback occurred following a skill execution) by the number of agreements plus disagreements and multiplying the result by 100%. For AJ, IOA was collected for 37% percent of sessions during baseline and 35% of sessions post intervention. IOA for AJ's baseline data was 96% (range, 88% to 100%) and 97% post intervention (range, 90% to 100%). IOA for Jay during baseline was 94% (range, 75% to 100%) and 96% post intervention (range, 87% to 100%).

Social Validity

Researchers collected social validity on the target behavior from different personal trainers at the gym. They were asked to respond to a questionnaire about their opinions on providing feedback to trainees (Appendix A). A second social validity questionnaire was administered to the trainees regarding their views on the importance of feedback (Appendix B). The questionnaires consisted of a Likert scale and five questions. The scale included the following phrases: strongly disagree, neutral, agree strongly, disagree, and agree. Each word or phrase was paired with a number 1-5 to coincide with the participants' response. The scale was selected because for the purpose of this study, researchers wanted to allow the individual participants to express to which degree they agreed or disagreed with the statements

Experimental Design and Procedures

The effects of BST for increasing the provision of feedback to trainees was evaluated using a non-concurrent multiple baseline design across participants. Personal trainers were aware

that their delivery of feedback was being assessed during baseline and post-BST sessions by the researcher. Sessions included any exercise that consisted of 8-15 repetitions of a single exercise in a pre-determined set. For example, three sets of eight (repetitions) of bench press provided three sessions of eight opportunities to provide feedback. Additionally, observer absent observations took place using a camera installed in the gym to collect data on the effects of reactivity. Although the trainers were aware that covert observations would take place, they did not know when these observations would take place.

Baseline

For baseline, the trainers were observed working with a trainee, and the researchers collected data on the delivery of feedback. No training or feedback was provided by the researcher to the trainer. In some sessions, the data were collected using a camera placed in the gym to covertly observe the delivery of feedback by the personal trainer (observer absent observations only occurred in baseline for AJ).

Behavioral Skills Training

Behavioral skills training (BST), implemented individually with each trainer, included four components: instruction, modeling, rehearsal, and feedback. The researcher defined and highlighted the importance of feedback for training others in how to perform skills, describing the two types of feedback and ideal frequency that it should occur at for effective training. The researcher then modeled the skill of providing feedback with the personal trainer acting as the trainee. Some examples of feedback given during the training phase included, “great work!”, “tighten your core,” “head up” and other positive or corrective phrases. During modeling, the researcher demonstrated how to provide feedback to the trainee while the trainee completed the

required exercise repetitions. This demonstration was repeated for three exercise sets of 10 repetitions. For the rehearsal component, the personal trainer practiced the feedback skills, using roleplay with a graduate student as the trainee. The personal trainer received descriptive praise from the researcher for each successful delivery of feedback provided to the trainee. If the personal trainer did not provide feedback appropriately, the researcher provided corrective feedback, instructing the personal trainer how and when to provide feedback to the trainee. Rehearsal continued until the personal trainer demonstrated the target frequency of trainee feedback without researcher intervention. Specifically, the BST session ended when the personal trainer provided feedback for each opportunity (each repetition) across the various exercises used for training, for three consecutive trials. Within 1 to 3 days following the training session, a post-BST assessment session occurred for data collection. If the personal trainer failed to provide feedback for each repetition, a booster session of BST was provided following the assessment session. The booster sessions were then followed by another post-BST assessment session. Booster sessions continued until the percentage of feedback delivery met the criterion of 100% across three sessions. Observer absent assessments were conducted between the post-BST assessments, where the personal trainer did not know they were being observed.

CHAPTER THREE:

RESULTS

Figure 1 shows data for AJ and Jay across baseline and intervention phases. The graph shows that both participants' performance increased from baseline after intervention was implemented. During the post-BST phase, both participants demonstration of the targeted skills increased during known observations with a smaller increase during the observer absent observations. However, after the booster sessions for the last half of the phase for both participants, observer absent, and observer present data increased. For AJ, after the booster session observer absent observations had a mean of 72% and the observer present observations reached criterion at 100%. For Jay, post booster session observer absent observations had a mean of 81% and observer present sessions reached criterion at 100%.

During baseline, AJ exhibited feedback during a mean of 16.12% of opportunities in the observer present condition. Following the initial BST session, the target behavior increased substantially in observer present assessments but only showed a slight increase in the observer absent assessments. Therefore, AJ received a booster BST session and performance increased substantially in the observer absent assessments and increased to 100% for seven consecutive assessments in the observer present condition. In baseline, Jay delivered feedback during a mean of 51.4% of opportunities when the observer was present and 35% of opportunities for observer absent observations demonstrating variable performance across observer present and observer absent assessments. It is also important to note that Jay's baseline data consisted of two different

participants, one new to the facility and one who was not. The participant who was new to the facility represented data points 10 through 15. Additionally, this same participant was used for all post-BST assessments over a course of 4 weeks. A booster session was administered after the initial BST session and the target behavior increased to 100% during the observer present assessments. Subsequent observer absent data reflected a smaller increase in percentage of feedback as hypothesized by researchers, but observer present data reflected trainer performance at 100% for nine consecutive data points.

Overall, the intervention increased the frequency of feedback provided to the trainee for both personal trainers. The observer absent observations demonstrated a smaller increase in the feedback provided by the personal trainers; however, booster sessions improved the percentage of opportunities with feedback during observer absent observations for both the personal trainers. Neither personal trainer provided the same frequency of feedback when the researcher was absent as they did when the researcher was present, nevertheless both improved their frequency when observer absently observed after a booster session was provided.

For the fitness staff which included the personal trainers and the gym owner, social validity data reflected that 75% strongly agreed and 25% agreed that it is important to provide feedback during training, so clients know how well they were doing. 100% of fitness staff agreed that telling clients when they engage in a skill correctly and telling them what they need to do to improve is an important part of feedback. However, 50% strongly disagreed and 50% were neutral that clients perform best when they get feedback on every repetition of a skill, they were learning. Furthermore, 50% of fitness professionals strongly agreed and 50% agreed that they provide adequate feedback. Social validity for the trainees demonstrated that 100% of trainees strongly agreed that it is important to receive feedback during training, so they know

how well they were doing. Additionally, 100% agreed being told they engaged in the skill correctly and what they need to do to improve were important parts of feedback. However, 66% of trainees strongly disagreed and 34% disagreed that they perform best when they receive feedback on every repetition of a skill they were learning. Additionally, 100% strongly agreed that their trainer provides them adequate feedback.

CHAPTER 4

DISCUSSION

The results of this study suggest that BST was effective for increasing the percentage of feedback given to trainees by their personal trainers. Moreover, participants performed better when they knew they were being observed versus the training sessions when a researcher was absent. These results were consistent with the staff training literature relating to reactivity (Brackett et al., 2007; Mowery et al., 2010). Nonetheless, the target behavior improved during observer absent assessments after booster sessions occurred even though the data during observer absent assessments were never discussed.

One limitation of this study was that we did not take in to account the experience of the trainee. When Jay worked with a new trainee, she provided more feedback than she did with her longer-term trainees. This occurred because the new trainees were learning the routines and the delivery of feedback after every repetition facilitated learning the routine. On the other hand, experienced trainees had mastered the routines and could complete the sets correctly with very little feedback. During baseline, Jay provided a mean of 76% to a new trainee, while conversely providing a mean of 42% for an experienced trainee. Furthermore, a third personal trainer was recruited for this study, but was excluded because he provided feedback for nearly 100% of the time with his trainee. The trainee was a new client, and there were no opportunities for observations with experienced trainees. The difference between clients and their needs based on their experience in personal training made it difficult to compare participant data and working

with experienced trainees increased the percentage of opportunities with feedback of the trainers during those observation periods.

Jay also worked with a new client midway through the baseline phase. This resulted in an increase in feedback and an upward trend in the baseline data. After this upward trend, covert observations of an existing client were completed which resulted in a decrease in the percentage of opportunities with feedback. Unfortunately, the confound of working with an existing trainee during the observer absent assessments made it impossible to attribute the decrease in performance to the experienced trainee or to the observer absent condition. This is a limitation in the study that makes analysis of the results of the intervention more difficult. More baseline data should have been collected in observer present conditions with existing clients. Conclusions about the effect on the observer present post-BST observations for Jay must be tempered based on this confound. Another limitation that made analysis difficult was not having data in observer absent condition in baseline for AJ. Not having observer absent data during the baseline phase for AJ made it difficult to analyze reactivity for this participant. Nonetheless, the difference in the level of the data in observer present versus observer absent conditions in the intervention phase strongly suggests reactivity to observation.

Another limitation involved the logistics of the personal trainers' training routines. At times, personal trainers had multiple clients who may have been in different parts of the facility, and they were moving back and forth between rooms to attend to multiple participants. Providing feedback for 100% of opportunities was not possible in these situations. In future research, the observation sessions should be structured to include only those occasions when the participant is working one-on-one with a trainee.

Social validity results suggest that the gym owner, personal trainers, and trainees all disagreed with the target criterion of feedback set as 100% as the results showed that 50% strongly disagreed and 50% were neutral that clients perform best when they get feedback on every repetition of a skill, they were learning. Nonetheless, trainers provided high frequency of feedback for new trainees in the baseline phase, indicating their responses did not correspond with the social validity results. Future research should specifically ask social validity questions about feedback for newer versus longer-term trainees. If trainee performance and professional opinions indicate that feedback may be decreased as the trainee improves, then researchers should consider how these criteria should be determined based on type of trainee. Additionally, social validity data demonstrated that the gym owner, personal trainers, and trainees all agreed that feedback was an important skill for personal trainers to possess.

Another consideration is possible broadening the definition of feedback to include any type of verbal response to a client. For example, personal trainers may not always be providing positive or corrective feedback, however they may be counting repetitions or spotting their trainees. This interaction provides a high level of attention to clients, and for most is satisfactory as it relates to the value of having a one-to-one personal trainer. Additionally, the study was affected by the broad definition of feedback. For example, feedback was observed and scored for both positive and corrective. If the instance had positive it counted as a demonstration of the target behavior, if the instance had corrective it counted as a demonstration of the target behavior, if the skill demonstration had both positive and corrective it counted equally. When collecting IOA data, if the IOA data collector counted positive and the original researcher counted as corrective, that was still a point of agreement because both agreed an instance of feedback occurred although the type of feedback was not necessarily an agreement.

Overall, BST with booster sessions was an effective intervention to teach personal trainers how to increase the percentages of opportunities they provided feedback. Not only did the personal trainers increase their frequency of feedback during observation present sessions, their frequency of feedback also increased during sessions where the observer was unseen. Future research should further evaluate the effectiveness of behavioral interventions targeting feedback by personal trainers and evaluate reactivity to see if improvements only occur, or occur more robustly, when the participants are being observed.

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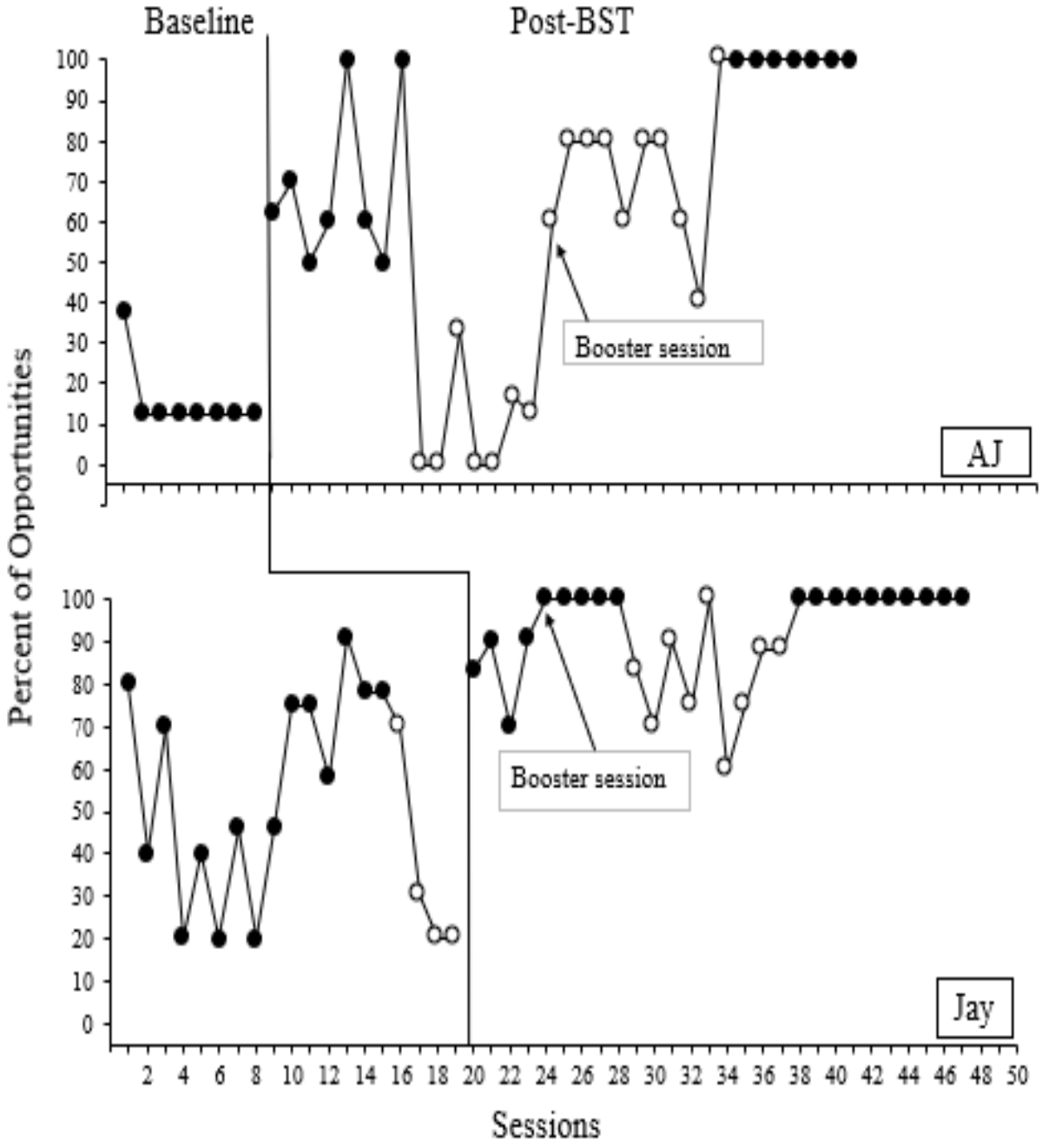
APPENDICIES

Appendix A: Percentage of Opportunities with Feedback

Figure 1: Multiple Baseline Graph



Note. Closed circle data points were with observer present, open circle data points were with observer absent.

Appendix B: Social Validity Questionnaire

Fitness Professionals I

1. It is important to provide feedback during training, so clients know how well they are doing

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

2. Telling clients when they engage in a skill correctly is an important part of feedback

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

3. Telling clients what they need to do to improve is an important part of feedback

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

4. Clients will perform best when they get feedback on every repetition of a skill, they are learning

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

5. I provide adequate feedback to clients

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

Appendix C: Social Validity Questionnaire

Trainee

1. It is important to receive feedback during training, so I know how well I am doing

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

2. Being told I engage in a skill correctly is an important part of feedback

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

3. Being told what I need to do to improve is an important part of feedback

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

4. I perform best when I get feedback on every repetition of a skill, I am learning

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree

5. My trainer provides adequate feedback to me

1	2	3	4	5
strongly disagree	disagree	neutral	agree	strongly agree