Evaluation of a Performance Management Intervention to Increase Use of Trial-Based Functional Analyses by Clinicians in a Residential Setting for Adults with Intellectual Disabilities

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Abstract

We evaluated the effects of a performance management package on the implementation of trial-based functional analyses (TBFAs) by 6 clinical supervisors working in a large agency providing residential and day-program services to approximately 800 adolescents and adults with intellectual disabilities across 2 states using remote methods. Implementation of TBFAs increased for 5 of the 6 participants following introduction of the treatment package.

Keywords Performance management · Training

Clinical professionals treating individuals with intellectual disabilities (ID) who engage in problem behavior often conduct a functional behavior assessment (FBA) to identify the function of problem behavior and inform the subsequent intervention. Functional analyses (FAs) can be used to demonstrate functional relations and identify the maintaining reinforcers (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994). Trial-based functional analysis (TBFA) is an FA method appropriate for settings lacking resources to conduct a more traditional FA (Bloom, Iwata, Fritz, Roscoe, & Carreau, 2011; Lambert, Bloom, Kunnavatana, Collins, & Clay, 2013).

There is a broad literature base, including a special issue of the *Journal of Applied Behavior Analysis* (spring 2013), demonstrating that interventions informed by the results of an FA lead to effective behavior reduction (e.g., Hanley, Iwata, & McCord, 2003). Despite this evidence, a recent report surveying the use of

different FBA methodologies by Board Certified Behavior Analysts® (BCBA®) indicated that only 36% of respondents conducted FAs *almost always* or *always*, and 15% reported *never* implementing FAs (Oliver, Pratt, & Normand, 2015). The infrequent use of FAs could be due to lack of training or other variables that prevent consistent implementation once the skill is acquired.

One possible approach to increasing implementation of TBFAs in clinical settings is by applying training and performance management interventions derived from the field of organizational behavior management, as training alone is often insufficient to produce the desired change in performance (Rodriguez, Sundberg, & Biagi, 2016). A review by Phillips (1998) demonstrated that performance management packages that included multiple antecedent- and/or consequence-based strategies were effective for improving staff implementation of targeted procedures in schools and day-treatment centers. In addition, researchers have

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demonstrated the effectiveness of using the Performance Diagnostic Checklist–Human Services (PDC-HS) to identify barriers contributing to performance issues and to indicate matched interventions in human-service settings (e.g., Bowe & Sellers, 2018; Carr, Wilder, Majdalany, Mathisen, & Strain, 2013). The purpose of the current study was to examine the effects of a performance management intervention package on the implementation of TBFA procedures by clinical supervisors in a residential and day-treatment agency for individuals with ID.

Method

Participants, Setting, and Materials

Five BCBAs and two Board Certified Behavior Analysts–Doctoral initially began the study; all provided informed consent. One BCBA did not continue participation in the study because he worked with children who did not engage in significant problem behavior and, therefore, he had no opportunity to conduct TBFA. The six remaining participants worked for the same company, which provides residential and day-program services to approximately 800 adolescents and adults with ID, for an average of 5 years (range 3–11 years). The company’s clinical director contacted the researcher; both indicated a desire to increase the frequency of TBFA implementation within the agency and requested TBFA training for their clinical department. The researcher proposed conducting a needs assessment in addition to training.

Training sessions occurred in two rooms at one of the company’s local offices. TBFA were conducted in the relevant setting (i.e., the client’s home or day-program facility). Data were reported via the company’s secure e-mail service. Coaching and performance feedback took place during weekly telephone calls (average 15 min, range 5–20 min). Materials included printed copies of the PDC-HS, as well as printed handouts and templates for the TBFA procedures.

Response Measurement and Experimental Design

Dependent variables and experimental design Posttraining and performance management treatment package effects were evaluated in a multiple-baseline design across participants. The primary dependent variable was the number of completed TBFA per week, defined as the completion of 10 trials in the selected conditions. Data were also collected on TBFA initiated each week, as it was possible for a TBFA to require more than one week to complete due to client absences or other applied clinical issues. An initiated TBFA was defined as participants starting the TBFA process (e.g., conducting a stimulus

preference assessment and selecting conditions for the TBFA). Participants submitted ongoing and completed TBFA data to the agency’s clinical director for the duration of the study, as well as to one of the experimenters who served as the coach once the treatment package was implemented.

Interobserver agreement (IOA) The clinical director and coach compared TBFA data sets (i.e., number of initiated and completed TBFA per participant). Agreement for meeting the initiated or completed criteria was 100% for all data sets for all participants.

Procedures

Needs assessment To assess barriers to implementing TBFA, we completed the PDC-HS (Carr et al., 2013) via individual phone interviews with each participant. The researcher read, and repeated if asked, the question and answer choices to the participant and recorded responses on the form. Participant responses did not indicate the area of *Training* as a significant barrier to implementing TBFA. In the category of *Resources, Materials, and Processes*, only one of three possible barriers was indicated (i.e., access to sufficiently trained direct-line staff). The two specific areas with the greatest number of items endorsed as possible barriers were *Task Clarification and Prompting* and *Performance Consequences, Effort, and Competition*. Indicated barriers included a lack of job aids and reminders, infrequent access to direct monitoring from a supervisor, a lack of frequent feedback, the level of effort required to complete the task, and other tasks taking precedence.

The researcher and clinical director reviewed the results of the PDC-HS. Despite the fact that scores did not indicate *Training* to be a strong potential barrier, access to well-trained support staff was indicated as a potential barrier; therefore, the clinical director elected to proceed with staff training. Additionally, the researcher and clinical director, based on the results of the PDC-HS, created a performance management package focused on specific concerns related to *Performance Consequences, Effort, and Competition*, as well as some items involving *Task Clarification and Prompting* to implement, should training alone fail to increase TBFA implementation.

Training Participants and their supervisees participated and received training over 2 consecutive days for a total of 12 h. We employed behavior skills training consisting of instruction, modeling, and role-playing with feedback to mastery. We trained the supervisors and supervisees together on TBFA rationale and procedures. Participants all met content mastery at 80% or better during knowledge checks. Next, we conducted breakout sessions, wherein supervisors received

training on designing, directing, and analyzing the results of a TBFA. Supervisees received additional practice and feedback implementing the components of a TBFA. Participants all met performance mastery criteria of 80% or better during role-play and practice. Participants were provided access to templates and job aids for conducting TBFA on the agency's server. Participants were instructed to use the provided materials to train any direct-care staff working with clients who would be involved in carrying out TBFA procedures.

Posttraining baseline During baseline, no additional guidance or expectations for conducting TBFA were provided. To ensure baseline data could be collected, participants were reminded to include TBFA data as they typically would in their regular data summaries submitted to the clinical director.

Posttraining performance management treatment package

The performance management package components were communicated to participants via e-mail. Participants were specifically asked not to share the e-mail, or the information in the e-mail, with any other staff. The first treatment component included goal setting for when and with whom TBFA should be completed (i.e., all incoming clients with a documented recent history of severe problem behavior and all existing clients not demonstrating at least a 60% reduction in problem behavior within 3 months of the most current intervention).

The second component required supervisors to participate in weekly coaching meetings that included reminders to submit TBFA data. Because the supervisors were located across a wide geographic area, spanning two states, we elected to implement weekly coaching over the phone. This intervention component also addressed the barrier involving lack of frequent feedback related to implementing TBFA. Weekly coaching sessions were conducted by the first author and included data reporting, discussion and recommendations, and performance feedback (e.g., praise, encouragement, and ideas to address barriers).

For the third component, the company elected to include an incentive of gift cards in an attempt to increase the likelihood of TBFA completion. Specifically, each participant received a \$25 gift card to a home goods store or a restaurant upon completion of her or his first TBFA. For each subsequently completed TBFA, each participant received a ticket, and those tickets were then entered into a quarterly drawing for a \$50 gift card.

Social validity Following completion of the study, we collected anonymous survey information from five of the six participants to better understand the context in which they were conducting TBFA. The survey, available from the first author, consisted of 11 questions (one requiring a rating with options from *agree* to *disagree*, two short-answer questions, and eight requiring very brief fill-in or selection answers). We collected responses about supervision resources,

responsibilities, clinicians' opinions surrounding conducting TBFA, and coaching sessions. We also sent participants a follow-up e-mail request for additional data (e.g., information related to the TBFA conducted and client outcomes).

Results

Figure 1 depicts the cumulative number of completed TBFA each week. Initiated TBFA are indicated with an asterisk in the week they began. During baseline, five participants (Gabe, Katia, Jamison, Janet, and Jack) did not complete any TBFA. The sixth participant, Tobias, initiated and completed three TBFA during baseline.

Following implementation of the intervention package with Gabe, he initiated and completed a TBFA and continued to initiate and complete TBFA fairly consistently throughout intervention. A similar pattern was demonstrated by Katia, who initiated her first TBFA following the first coaching session and demonstrated fairly consistent initiation and completion of TBFA following implementation of the treatment package. Jamison took the longest (i.e., between Weeks 5 and 8) to initiate and complete his first TBFA following implementation of the intervention. He also initiated and completed two subsequent TBFA. Following intervention, Janet initiated and completed one TBFA but did not complete any other TBFA. Jack initiated and completed his first TBFA following the third coaching session, and he initiated and completed a second TBFA during the 11th and 12th weeks of the intervention. Tobias, who initiated and completed three TBFA in baseline, did not initiate or complete any TBFA following implementation of the intervention package.

Five of the six participants responded to the anonymous follow-up survey. The number of clients for which each clinician was responsible varied (between 23 and 80). The number of trained supervisees assisting with TBFA was between two and four. Half of the clinicians (three) covered a geographic area of less than 130 km². According to their reports, client availability varied across clinicians, but most were available during and after the day program.

All respondents agreed that other duties often took precedence over conducting TBFA. The most frequently indicated barrier to conducting TBFA was "lack of time to complete the TBFA or being too busy with other duties." All respondents indicated they agreed the coaching sessions were helpful, indicating the most effective part of the coaching sessions was receiving advice and having questions answered regarding TBFA events and idiosyncratic issues with clients. Respondents reported that some weeks' coaching sessions were unnecessary, yet coaching sessions were still scheduled for consistent implementation.

All six participants responded to the follow-up request, providing the indicated information (e.g., number of new or existing clients, correspondence between hypothesized

Fig. 1 Cumulative number of trial-based functional analyses (TBFAs) completed weekly across supervisors (asterisks denote TBFAs initiated)

function and TBFA-indicated function, whether TBFA results were used to modify or inform intervention plans, and indication of improvement in target behavior following the TBFA); however, the data were not reported in a systematic format. Participants generally replied with graphed data and anecdotal summaries, and some of the reports were incomplete (i.e., data were not included for all clients for whom a TBFA was conducted). However, it is interesting to note that participants reported that the results of the TBFAs either indicated a previously unidentified function or failed to indicate a previously hypothesized function for five of the seven clients identified as already having a behavior plan.

Discussion

The results of the study indicate that the common practice of providing staff training to address performance deficits in a clinical setting is insufficient for producing performance change. In this study, training alone did not result in the desired increases in TBFA implementation in the clinical setting for five out of six participants. However, following a needs assessment identifying barriers to conducting TBFAs, a specifically designed performance management package produced varied effects on TBFA implementation.

Effects of the performance management package were quickly demonstrated for four of the participants (Gabe, Katia, Janet, and Jack). For Jamison, the effect was not seen as quickly, possibly due to a delay in obtaining consent for the TBFAs, as this was a common barrier identified in the clinician survey. The effects of the intervention did not maintain over time for Janet, possibly due to insufficient time (i.e., other clinical duties competing) to complete the TBFAs, as this was also a common barrier reported by clinicians. However, the reported difficulties in conducting TBFAs are strictly based on self-report measures from the certified behavior analysts and were not directly evaluated in the current study. As can be seen in Fig. 1, there were time delays for completing some of the TBFAs, and some were not completed before the end of the study. Barriers to timely completion included factors such as client vacations and illnesses. Future researchers may wish to examine strategies for mitigating these barriers and to investigate if completing TBFAs over a longer time period impacts the clinical results of the analysis or the resulting intervention.

One limitation of this study is that it is unclear which components of the intervention were critical. Future researchers could implement a component analysis to investigate which parts of the treatment package were critical. Additionally, there is no way to know if another intervention or intervention package would have been equally successful. We did not collect treatment fidelity on participants' implementation of TBFAs, so we do not have any data to confirm that completed TBFAs

were conducted correctly. Another limitation is that we did not collect data on the number of clients who would have met the criteria for receiving a TBFA pretraining or during baseline. However, it is highly unlikely that zero clients met those criteria pretraining and in baseline. Therefore, future researchers and clinical practitioners implementing goal setting as a means to impact staff performance might consider collecting data on the opportunity to meet the goal in baseline. Relatedly, we did not collect treatment fidelity on implementation of coaching sessions. We also did not collect systematic data on clients' rates of problem behavior prior to and following TBFA implementation; therefore, we cannot draw client-specific conclusions about the effects of conducting TBFAs and using the results to inform interventions. Future researchers and clinical practitioners may wish to collect client outcome data to further support that desired procedures not only are implemented but also produce positive results for clients.

This study contributes to the applied literature base by demonstrating that staff training alone may be insufficient to improve targeted staff performance. However, a performance management package to increase the frequency of conducting TBFAs was effective to some degree for five of the six participants. Moreover, the treatment package was delivered across a wide geographic area using remote methods (e.g., e-mail and phone). Increasing the clinicians' reliance on a more precise FBA method over descriptive assessments and using those results to inform interventions may result in positive client outcomes.

It is assumed that many organizations default to providing staff training in an attempt to produce a behavior change in their employees, but that training may not be the functional solution in some cases; the literature base investigating this area is lacking. Researchers may wish to survey organizations to determine their go-to response to common performance concerns and to systematically explore methods to evaluate procedures to assess specific barriers and identify matched interventions, as well as the results of different interventions. It may also be important for researchers to investigate other variables, such as return on investment (i.e., amount of desired change for the cost) and impact on staff (e.g., perception, burnout, turnover). The results of this study expand the current literature by providing preliminary evidence that agencies may elect to conduct a needs assessment—for example, using the PDC-HS—to assist in the identification of barriers to desired performance and in the creation of successful interventions. Employing a systematic approach could result in a faster route to improved client outcomes, as well as financial and human resource savings for the agencies.

Implications for Practice

- Training alone might be insufficient to produce changes in staff performance.

- Conducting a needs assessment can inform development of a treatment package.
- Performance management packages can be implemented remotely (via phone and e-mail).
- The Performance Diagnostic Checklist–Human Services (PDC-HS) is a useful tool for identifying barriers to staff performance.

Compliance with Ethical Standards

Conflict of interest There are no conflicts of interest for any of the authors.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

References

- Bloom, S. E., Iwata, B. A., Fritz, J. N., Roscoe, E. M., & Carreau, A. B. (2011). Classroom application of a trial-based functional analysis. *Journal of Applied Behavior Analysis*, 44(1), 19–31. <https://doi.org/10.1901/jaba.2011.44-19>.
- Bowe, M., & Sellers, T. P. (2018). Evaluating the Performance Diagnostic Checklist–Human Services to assess incorrect error-correction procedures by preschool paraprofessionals. *Journal of Applied Behavior Analysis*, 51, 166–176. <https://doi.org/10.1002/jaba.428>.
- Carr, J. E., Wilder, D., Majdalany, L., Mathisen, D., & Strain, L. (2013). An assessment based solution to a human-service employee performance problem: An evaluation of the Performance Diagnostic Checklist–Human Services. *Behavior Analysis in Practice*, 6, 16–32. <https://doi.org/10.1007/BF03391789>.
- Hanley, G. P., Iwata, B. A., & McCord, B. E. (2003). Functional analysis of problem behavior: A review. *Journal of Applied Behavior Analysis*, 36, 147–185. <https://doi.org/10.1901/jaba.2003.36-147>.
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1994). Toward a functional analysis of self-injury. *Journal of Applied Behavior Analysis*, 27, 197–209. <https://doi.org/10.1901/jaba.1994.27-197>.
- Lambert, J. M., Bloom, S. E., Kunnavatana, S. S., Collins, S. D., & Clay, C. J. (2013). Training residential staff to conduct trial-based functional analyses. *Journal of Applied Behavior Analysis*, 46, 296–300. <https://doi.org/10.1002/jaba.17>.
- Oliver, A. C., Pratt, L. A., & Normand, M. P. (2015). A survey of functional behavior assessment methods used by behavior analysts in practice. *Journal of Applied Behavior Analysis*, 48, 817–829. <https://doi.org/10.1002/jaba.256>.
- Phillips, J. R. (1998). Applications and contributions of organizational behavior management in schools and day treatment settings. *Journal of Organizational Behavior Management*, 18, 103–129. https://doi.org/10.1300/J075v18n02_06.
- Rodriguez, M., Sundberg, D., & Biagi, S. (2016). *OBM applied! A practical guide to implementing organizational behavior management: Vol. 2. Choosing the right solution*. Melbourne: ABA Technologies.