

## Group Training of Applied Behavior Analysis (ABA) Knowledge Competencies to Community-Based Service Providers for Adults with Developmental Disabilities

James K. Luiselli, CarrieAnne St. Amand, Christine MaGee & James M. Sperry

### Abstract

We describe a training program to teach applied behavior analysis (ABA) knowledge competencies to paraprofessional staff (N = 47) at a habilitation services agency for adults with developmental disabilities. Before and following training, staff completed assessment of knowledge tests for three content areas: basic learning principles, instructional strategies, and prompting and prompt-fading methods. Training was implemented in a group format that included a standardized curriculum, didactic presentation, case illustration, and directed discussion. Average tests scores (percent correct) for the three ABA knowledge competencies increased from pretraining to posttraining. Practical considerations relative to large-scale staff training are discussed.

Keywords: staff training, applied behavior analysis, developmental disabilities

---

People who have developmental disabilities often receive habilitation services within community-based and residential programs. Agencies providing these services rely on paraprofessional staff to implement care plans for skill acquisition and behavior reduction. For this reason, direct-care staff must receive pre-service and “on the job” training (Reid, 2004). The objectives of training are to teach staff necessary skills for supporting consumers who have learning and behavior challenges.

Many service agencies incorporate applied behavior analysis (ABA) as an instructional and intervention methodology (Matson, Laud, & Matson, 2004). Accordingly, staff training research has focused on several ABA skills such as conducting a functional analysis (Moore, Edwards, Sterling-Turner, Riley, DuBand, & McGeorge, 2002), performing preference assessment (Lavie & Sturmey, 2002), carrying-out discrete trial instruction (Gilligan, Luiselli, & Pace, 2006; LeBlanc, Ricciardi, & Luiselli, 2005; Sarokoff & Sturmey, 2004), and implementing behavior support plans (Coddling, Feinberg, Dunn, & Pace, 2005). Some of the procedures used to teach these and related skills include performance feedback (Alavosius & Sulzer-Azaroff, 1986; Lavie & Sturmey, 2002; LeBlanc et al., 2005), written instructions (Moore et al., 2002), video modeling (Iwata, Wallace, Kahng, Lindberg, Roscoe, Conners et al., 2000), and role-playing (Moore et al., 2002). No single procedure is demonstrably effective and typically, several methods are applied as a “training package.”

Teaching critical *knowledge competencies* often is an initial objective of comprehensive training initiatives because understanding concepts and methods should enable staff to implement care plans effectively (Reid, Rotholz, Parsons, Morris, Braswell, Green, & Schell, 2003; Ricciardi, 2005). In an earlier study, Luiselli and St. Amand (2005) instituted a training program that targeted ABA knowledge competencies with direct-care staff at child and adult service settings. Whereas that study evaluated training with three groups of newly hired staff (N = 24), the present research included a larger number of service providers, over successive periods of hire, at a single setting for adults with developmental disabilities. We documented skill acquisition through pretraining and posttraining tests of knowledge in a within-group evaluation design.

## Method

### *Participants and Setting*

The participants were direct-care staff employed at a habilitation services program for adults with developmental disabilities. There were six groups of participants who received training and pretraining/posttraining assessment (described below) during their initial week of employment at the program. Each group was hired in successive months, producing a total of 47 participants. The average age of the participants was 36 years (range: 19-60 years), with females comprising 57% and males comprising 43% of the sample. Based on information reported in their employment application, 74% of the participants worked previously in human services. Regarding educational background, 9% of participants had received a GED, 66% completed high school, 11% earned an associates degree, and 14% were college graduates.

Adults attending the habilitation services program had diagnoses of mental retardation, autism, and pervasive developmental disorder. They received instruction and behavior support at a vocational setting each weekday and within supervised group homes located in nearby communities. As direct-care staff, the participants were responsible for implementing the procedures specified in each adult's Individual Service Plan (ISP). The participants worked assigned shifts within the vocational and residential settings. As noted, the training program evaluated in this study was conducted with them one week before they assumed direct-care positions.

### *Training Curriculum and Materials*

The training curriculum included three content modules that addressed ABA theory and practice. Module 1, *Basic Learning Principles*, covered (1) defining behavior, (2) positive and negative reinforcement, (3) the "three term" contingency, (4) observation, (5) measurement, (6) data collection, (7) functional assessment, (8) interpreting data, (9) consequence and antecedent intervention, and (10) evaluating outcome. Module 2, *Instructional Strategies*, focused on (1) discrete trial instruction, (2) incidental teaching, (3) task analysis, (4) response chaining, and (5) shaping. In Module 3, *Prompting and Prompt-Fading Methods*, the contents were (1) physical prompting, (2) verbal prompting, and (3) strategies to withdraw prompts.

Luiselli and St. Amand (2005) described the process of curriculum preparation and development. Briefly, senior clinical staff responsible for training referenced several texts (Catania, 1998; Cooper, Heron, & Heward, 1987) and competency "task lists" promulgated by the Behavior Analyst Certification Board ([www.bacb.org](http://www.bacb.org)) to identify fundamental content areas. The specific concepts and principles also were chosen to reflect "foundation" competencies all staff should possess. Each content module was a series of slides prepared in *Microsoft Powerpoint* format. The slides presented a concept, definition, explanation, or "real world" depiction for each topic covered in the content modules. To illustrate, a slide depicting positive reinforcement stated: "Mary points to a picture of a cup in order to communicate. Staff hands her a cup of liquid. In the future, Mary points to the picture of the cup more frequently." The slides also included graphics such as data displays, figures, and examples of recording forms. Each content module had an accompanying trainer's manual to guide slide presentation.

### *Measurement*

An Assessment of Knowledge (AOK) "pencil and paper" test was prepared for each content module. The AOK tests were comprised of 10, 4-item multiple choice questions. Participants recorded their answers on the test form during pretraining and posttraining sessions. A single trainer (third author) from the habilitation services program supervised test administration. Using a scoring key, the trainer

calculated the percent of questions answered correctly (number of correct answers/10 x 100). Participants were informed about their scores immediately following each session.

### *Procedures*

Pretraining assessment, training, and posttraining assessment phases were conducted with the participants during their initial week of employment at the habilitation services program. They did not have shift assignments or interact with consumers during the week. Each group of participants followed the same sequence. First, they took the AOK pretest for Module 1, received training on the module, and took the AOK posttest on one day. The next day, pretesting, training, and posttesting were administered for Module 2 and Module 3.

*Pretraining.* Participants were given the AOK pretest immediately before training on the respective content module. No other information about the pretest was provided. Each pretraining session concluded when all participants in the group had completed the pretest and submitted it to the trainer.

*Training.* The third author served as trainer. Between 3-12 participants comprised the training groups. All participants in a group were trained on each of the content modules during a single session. The training sessions were 2.5-3 hours (Module 1) and 2 hours (Module 2 and Module 3) in duration.

The trainer presented each content module according to the format outlined in the respective instructional manual. She commented about each slide as it was depicted, emphasizing key concepts that were highlighted visually. Consistent with principles of adult learning (Everson & Reid, 1999), participants were encouraged to ask questions, interact with the trainer, and seek clarification if information was unclear. The trainer referenced material in the content modules to situations the participants likely would encounter in their direct-care roles. Each training session concluded with a brief summary and discussion.

*Posttraining.* Immediately following each training session on a content module, the participants completed and submitted the respective AOK posttest. Posttraining conditions were identical to pretraining.

### Results

The AOK test scores (percent correct) are presented in Figure 1. For the purpose of visual inspection, these data were summarized by showing the average test score for the six participant groups during the four test administrations conducted over two days (day-one pretraining and posttraining for Module 1 and day-two pretraining and posttraining for Module 2 and Module 3). For Module 1 (*Basic Learning Principles*), the average was 52% (20-100%) correct at pretraining and 86.3% (50-100%) correct at posttraining. Results for Module 2 (*Instructional Strategies*) were an average of 64% (30-100%) correct at pretraining and 88.9% (70-100%) correct at posttraining. For Module 3 (*Prompting and Prompt-Fading Methods*) the average was 64% (30-100%) correct at pretraining and 87.8% (50-100%) correct at posttraining.

1 shows the average pretraining and posttraining AOK test scores (percent correct) per content module for each training group.

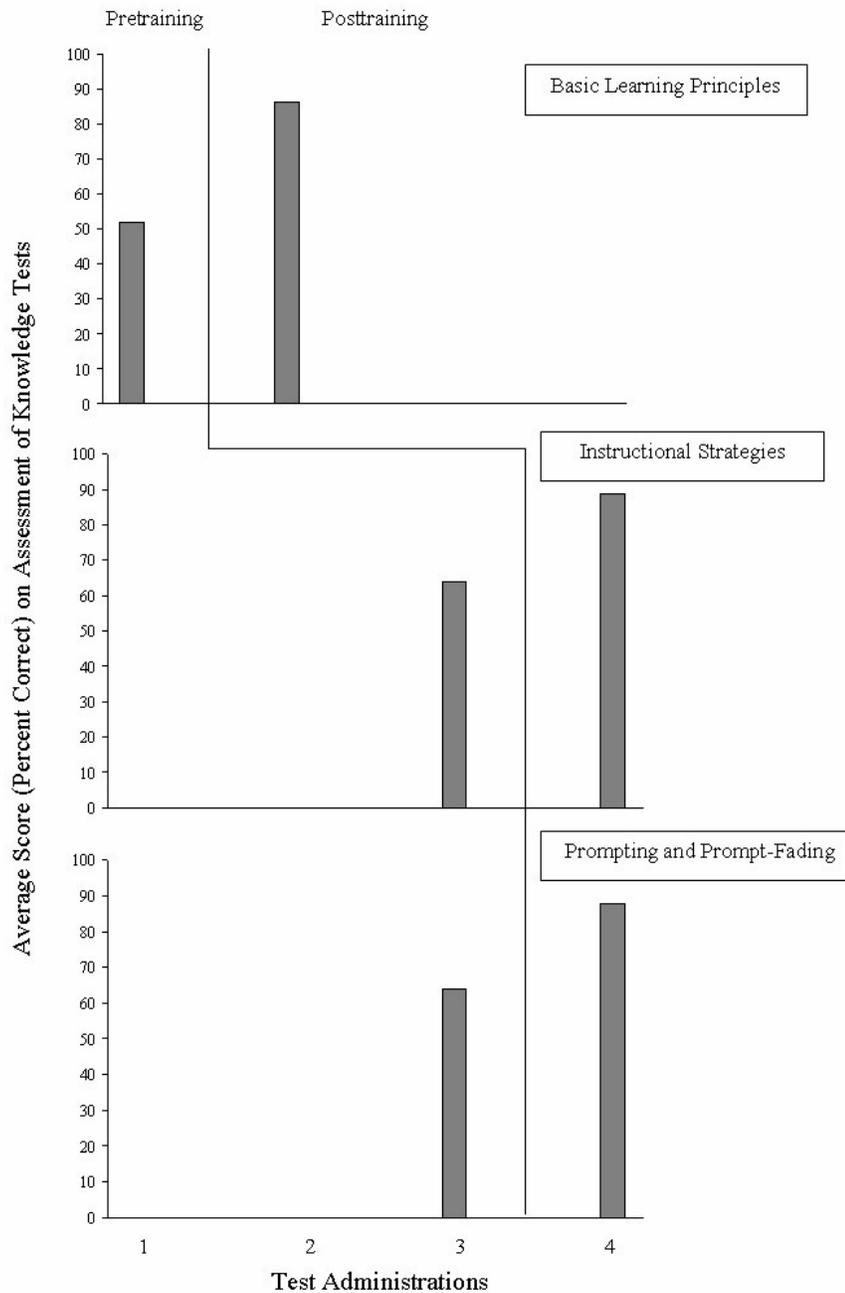


Figure 1. Average Score (Percent Correct) on Assessment of Knowledge (AOK) Tests.

Table 1

Average Pretraining and Posttraining AOK Test Scores (Percent Correct) per Content Module for Each Training Group

Group	Module 1		Module 2		Module 3	
	Pre	Post	Pre	Post	Pre	Post
1 (N = 3)	56.5%	100%	86.6%	93.3%	73.3%	96.6%
2 (N = 4)	57.5%	75%	50%	95%	65%	80%
3 (N = 12)	53.3%	84.1%	55.8%	83.3%	68.3%	85%
4 (N = 5)	44%	92%	74%	86%	64%	94%
5 (N = 12)	53.6%	84.1%	56%	80.8%	65%	84.1%
6 (N = 11)	47.2%	82.7%	61.8%	90%	49%	87.2%

### Discussion

The present study evaluated a group training format with direct-care staff who were new employees at a habilitation services program for adults with developmental disabilities. Staff were hired over successive months, forming pre-service training groups comprised of 3-12 participants. We selected ABA knowledge competencies to ensure that they had a fundamental understanding of key learning concepts and applications in a setting with a behavior analytic orientation. In summary, participants' knowledge of basic learning principles, instructional strategies, and prompting/prompt-fading methods improved as measured by pretraining and posttraining tests.

Several facets of the training model were designed because of requirements at the habilitation services program. The ABA content areas, for example, had to be addressed with staff during their first week of employment, before they interacted with consumers, and while they received a general orientation about other topics (e.g., human rights, health safety, medication administration). For this reason, the knowledge competency training was condensed within two days. A second concern was that training had to be group-focused and time-limited. Our strategy in this regard was to develop content modules that could be presented in topic-specific training sessions, conducted by a single trainer, using

efficient instructional methods. Training was facilitated by having a standardized presentation format per content module that incorporated pleasant visual stimuli (slides), case illustrations, and trainer-directed discussion. We did not assess participants' perceptions of training but subjectively, it appeared to be well received and consistent with their entry skills.

We note several study limitations. While recognizing the value of training knowledge competencies, our study did not include a measure of staff performance. That is, a better understanding of ABA concepts and principles does not guarantee that staff will interact more effectively with consumers during instructional activities. Accordingly, pre-service staff training programs should consider performance-focused direction during initial didactic training (Reid et al., 2003), combined with "on the job" support using evidence-based methods (Ricciardi, 2005). Our results should be qualified further because the assessment of knowledge test results was restricted to a single day. Whether staff retained the assessed knowledge competencies weeks and months following training is uncertain, although in our earlier study we found positive posttraining maintenance with a similar group of service providers (Luiselli & St. Amand, 2005). Finally and as mentioned previously, we did not perform social validity (consumer satisfaction) assessment.

Group administered staff training is beneficial in human service agencies with a large workforce and limited resources. In the present study, one person was able to conduct training sessions and the accompanying pretraining and posttraining assessments. As such, the methodology we evaluated appears to be time-efficient and capable of achieving rapid results. Future research should explore the most effective complement of training procedures, measure both knowledge and performance competencies, and evaluate transfer (generalization) of the skills acquired during training.

#### References

- Alavosius, M. P., & Sulzer-Azaroff, B. (1986). The effects of performance feedback on the safety of client lifting and transfer. *Journal of Applied Behavior Analysis, 19*, 261-267.
- Catania, A. C. (1998). *Learning (fourth edition)*. Upper Saddle River, NJ: Prentice-Hall, Inc.
- Codding, R. S., Feinberg, A., Dunn, E. K., & Pace, G. M. (2005). Effects of immediate performance feedback on implementation of behavior support plans. *Journal of Applied Behavior Analysis, 38*, 205-219.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (1987). *Applied behavior analysis*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Everson, J. M., & Reid, D. H. (1999). *Person-centered planning and outcome management: maximizing organizational effectiveness in supporting quality lifestyles among people with disabilities*. Morganton, NC: Habilitative Management Consultants.
- Gilligan, K. T., Luiselli, J. K., & Pace, G. M. (2006). Training paraprofessional staff to implement discrete trial instruction: Evaluation of a practical performance feedback intervention. *The Behavior Therapist*, in press.
- Iwata, B. A., Wallace, M. D., Kahng, S., Lindberg, J. S., Roscoe, E. M., Conners, C., et al (2000). Skill acquisition in the implementation of functional analysis methodology. *Journal of Applied Behavior Analysis, 33*, 181-194.

- Lavie, T., & Sturmey, P. (2002). Training staff to conduct a paired-stimulus preference assessment. *Journal of Applied Behavior Analysis, 35*, 209-211.
- LeBlanc, M. P., Ricciardi, J. N., & Luiselli, J. K. (2005). Improving discrete trial instruction by paraprofessional staff through an abbreviated performance feedback intervention. *Education and Treatment of Children, 28*, 76-82.
- Luiselli, J. K., & St. Amand, C. (2005). Staff training in applied behavior analysis: Improving knowledge competencies of service providers for people with developmental disabilities. *Mental Health Aspects of Developmental Disabilities, 8*, 120-125.
- Matson, J. L., Laud, R. B., & Matson, M. L. (Eds.) (2004). *Behavior modification for persons with developmental disabilities: Treatments and supports*. Kingston, NY: NADD.
- Moore, J. W., Edwards, R. P., Sterling-Turner, H. E., Riley, J., DuBard, M., & McGeorge, A. (2002). Teacher acquisition of functional analysis methodology. *Journal of Applied Behavior Analysis, 35*, 73-77.
- Reid, D. H. (2004). Training and supervising direct support personnel to carry out behavioral procedures. In J. L. Matson, R. B. Laud, & M. L. Matson (Eds.), *Behavior modification for persons with developmental disabilities: Treatments and supports* (pp. 73-99). Kingston, NY: NADD.
- Reid, D. H., Rotholz, D. A., Parsons, M. P., Morris, L., Braswell, B. A., Green, C. W., & Schell, R. M. (2003). Training human service supervisors in aspects of PBS: Evaluation of a statewide, performance-based program. *Journal of Positive Behavioral Interventions, 5*, 35-46.
- Ricciardi, J. N. (2005). Achieving human service outcomes through competency-based training. *Behavior Modification, 29*, 488-507.
- Sarokoff, R. A., & Sturmey, P. (2004). The effects of behavior skills training on staff implementation of discrete trial teaching. *Journal of Applied Behavior Analysis, 37*, 535-538.

#### AUTHORS' NOTE

This study was conducted at the May Center for Adult Services, Revere, MA. Address correspondence to James K. Luiselli, May Institute, 41 Pacella Park Drive, Randolph, MA 02368 (email: [jluiselli@mayinstitute.org](mailto:jluiselli@mayinstitute.org)).

#### Author Contact Information:

**James K. Luiselli, Ed.D., ABPP, BCBA**  
**May Institute**  
**One Pacella Park Drive**  
**Randolph, MA 02368**  
**Telephone: 781-437-1205**  
**Fax: 781-4400401**  
**Email: [jluiselli@mayinstitute.org](mailto:jluiselli@mayinstitute.org)**