

Chapter 5

Implementation-Based Case Studies for Preschool-Age to School-Age Children

Abstract Applied Behavior Analysis (ABA) focuses on implementing procedures derived from the principles of behavior (e.g., reinforcement and punishment) to improve the quality of people’s lives (Baer et al. in *J Appl Behav Anal* 1:91–97, 1968; Cooper et al. in *applied behavior analysis*. Pearson, Upper Saddle River, 2007). This “application” of behavioral principles is one of the seminal indicators of the field of ABA, as first described and still referenced by Baer et al. (*J Appl Behav Anal* 1:91–97, 1968) in their article, *Some Current Dimensions of applied behavior analysis*. The current chapter (Chap. 5) explores the guiding dimensions of ABA (applied, behavioral, analytic, technological, conceptual systems, effective, and generality) as the foundation for the implementation of behavior-change programs. Building on Section 1 (assessment) and Section 2 (planning), Section 3 begins to examine considerations surrounding the implementation of ABA programs to support preschool-age and school-age children. Often, behavior analysts are not directly implementing a behavior-change program and, instead, must teach, support, and guide other mediators (e.g., parents, teachers, and caregivers) to effectively utilize behavior-change strategies. This “mediator model” is a key area of focus when implementing ABA programs. Additional areas of consideration include behavior measurement, visual analysis and interpretation of graphed data, data-based decision-making, and maintaining a dual focus on reducing the frequency of problematic behaviors while introducing functionally equivalent, yet socially appropriate, replacement behaviors. In this chapter, entitled “Implementation—Based Case Studies for Preschool-Age and School-Age Children,” these complex considerations are explored through five-case scenarios involving children in home, school, and community settings.

Keywords Implementation • Preschool • School-age children • Reinforcement • Punishment • Technology • ABA • Behavior-change programs • Parents • Teachers • Caregivers • Mediator model • Data-based decision-making • Problematic behaviors • Replacement behaviors

CASE: iii-I1

Important for ME, or important for YOU?

Setting: Community Age-Group: Preschool

LEARNING OBJECTIVE:

- Analyze data to determine the function of a behavior.

TASK LIST LINKS:

- **Measurement**
 - (A-01) Measure frequency (i.e., count).
 - (A-03) Measure duration.
 - (A-12) Design and implement continuous measurement procedures (e.g., event recording).
- **Assessment**
 - (I-04) Design and implement the full range of functional assessment procedures.
 - (I-05) Organize, analyze, and interpret observed data.
 - (I-06) Make recommendations regarding behaviors that must be established, maintained, increased, or decreased.
- **Intervention**
 - (J-01) State intervention goals in observable and measurable terms.
 - (J-02) Identify potential interventions based on assessment results and the best available scientific evidence.
 - (J-14) Arrange instructional procedures to promote generative learning.
- **Fundamental Elements of Behavior Change**
 - (D-03) Use prompts and prompt fading.
 - (D-08) Use discrete-trial and free-operant arrangements.
 - (D-09) Use the verbal operants as a basis for language assessment.
 - (D-14) Use listener training.

KEY TERMS:

- **ABC Chart**
 - A chart that tracks a direct observation technique whereby the antecedent (A), the behavior (B), and the consequence (C) are recorded as they occur in the context which are later analyzed for trends and patterns which can help to determine the function of the behavior and is often part of a functional behavior assessment (Alberto and Troutman 2013).

- **Duration**
 - A dimension of behavior that examines how long a behavior persists (Mayer et al. 2014).
- **Frequency**
 - A dimension of behavior that examines how often a behavior occurs (Mayer et al. 2014).
- **Function-Based Definition of Behavior**
 - Involves defining the behavior based on the function of the behavior (consequences or outcomes) or why the behavior is occurring. Traditionally, the method to discern this information is through a functional behavior assessment or functional analysis (Filter and Nolan 2012).
- **Intensity**
 - A dimension of behavior that examines the forcefulness of the behavior (Mayer et al. 2014).
- **Time-Out**
 - Contingent on the display of a challenging behavior, time-out is a punishment technique that involves the withdrawal of an opportunity to gain access to positive reinforcement or access to positive reinforcers themselves (Cooper et al. 2007).
- **Topography-Based Definition of Behavior**
 - A description of the behavior that involves describing what is occurring rather than why it is occurring, including the movements that comprise the behavior (Alberto and Troutman 2013).
- **Verbal Operants**
 - The principles of applied behavior analysis apply to all human behavior, including verbal behavior. In his book, *Verbal Behavior*, B.F. Skinner outlined a group of verbal operants, or units of language that each serves a different function. They are mand (i.e., asking for reinforcers that you want), tact (i.e., naming or identifying objects, actions, or events), echoic (i.e., repeating what is heard), intraverbal (i.e., when words are controlled by other words such as when answering questions or having conversations), textual (i.e., reading written words), and transcription (i.e., writing and spelling words spoken to you) (Kelly et al. 2007).

Important for ME, Or Important for YOU?

Tracey has been an Early Childhood Educator for more than 30 years and is well known and well respected as an educator in her community. Year after year she leads teams of educators at the local early learning and childcare center “Great Beginnings,” rotating between the preschool-age and school-age classrooms.

In her preschool class this year is Sarah, an energetic three-year-old. Sarah joined the class only a few weeks ago after her family moved into the community. During an initial interview with Sarah’s parents, Tracey learned that Sarah has a language delay which causes her to have difficulty expressing herself. Her parents explained to Tracey that because of this, Sarah is often frustrated, and this frustration often escalates into crying, temper tantrums, throwing objects, and, at times, even hitting others.

Tracey has a warm, gentle, but firm approach to managing the behavior of the children in her class. It did not take long before she began to see Sarah’s frustration. Last week, Sarah wanted to join two other children, Aiden and Noah, who were busy playing pretend dress up. Tracey watched as Sarah approached the two children and appeared to try to join their play. Having difficulty expressing herself, she had trouble keeping up with their fast-paced dialogue and conversation. After a few minutes, Aiden and Noah began to ignore Sarah, causing Sarah to become very upset. It did not take long before this escalated to Sarah crying and ripping a piece of the dress-up clothing Aiden and Noah were playing with.

Tracey has been responding to Sarah’s behavioral outbursts as she always has for all of the children in her classes each year—with a stern verbal reprimand followed by a brief **time-out**, often in the corner of the room, facing the wall. Tracey believes that Sarah has to learn that her outbursts are not acceptable in the classroom.

After about a week of this recurring pattern of Sarah’s frustration and behavioral outbursts, Tracey reprimanded and gave Sarah a time-out. Tracey also decided that a referral to a local early intervention program is needed. With only herself and one assistant, and a class of 15 preschoolers, Tracey was struggling to both respond to Sarah and support the other children in the class.

During her initial phone conversation with Rachel, a Board Certified Behavior Analyst, Tracey noted that she would like behavioral consultation because Sarah’s behavior has to change, and further thought that Sarah would benefit from one-to-one intensive behavioral intervention (IBI) to teach her social skills. “I can’t have these types of outburst in my classroom” Tracey told Rachel. Rachel listened carefully and supportively to Tracey and, after more than 20 min, asked whether she could come in to classroom to see what was happening.

Rachel was looking forward to meeting Tracey and supporting her to develop a supportive intervention for the difficulties that Sarah has been experiencing. She was particularly interested in guiding Tracey to think about both the **topography** and **function** of Sarah’s problematic behaviors and to develop habilitation-based goals and objectives. When she arrived at the center, Rachel was greeted by Tracey.

After a warm welcome, Tracey said, “I am very busy, Sarah is over there, please go spend your time with her. Let me know what program you have for Sarah and how long it might be until she will begin to change her behavior. I can’t have those outbursts in my classroom.”

Rachel was stunned. As she sat in the corner and began to observe Sarah in the classroom, she had a recurring thought: *Who was it that really had to change here, Sarah or Tracey?* In the meantime, Rachel began to collect data on the **frequency** of the behavior, including when it happened, the **duration**, and the **intensity**. She collected **ABC data** for that first morning and asked Tracey whether she could come back each morning during the week. During her observations, Rachel also noted Sarah’s use of **verbal operants** such as mands, tacts, echoics, and intraverbals, along with textual and transcription operants. Later the next week, in her office, Rachel analyzed her data and started to complete a **functional assessment**. After looking at the data, a pattern appeared. In the antecedent column, Tracey had placed a demand on Sarah, such as asking her to put away a toy. Afterward, Sarah engaged in the behaviors that Tracey described as an “outburst.” Following this, Tracey usually ignored her and moved onto what she had to do with the rest of the children, and usually did the task herself, as she was busy and needed to move on. Rachel looked and thought, *I think I know what is happening here!*

The Response: Principles, Processes, Practices, and Reflections

Principles

(Q1) Describe how Rachel would have collected frequency, duration, and intensity data in the classroom. Which information did each dimension give her for her analysis?

(Q2) Describe Sarah’s “outbursts” in terms of function-based and topography-based descriptions.

Processes

(Q3) What other components or information would Rachel need to complete to ensure that her functional assessment is accurate?

(Q4) Score the FAST to see the results from the Web site below. Is this consistent with the information that Rachel found in the ABC data?

<https://depts.washington.edu/dbpeds/Screening%20Tools/FAST.pdf>

Practice

(Q5) Based on the information in the case study, what is the function of Sarah’s behavior (Fig. 5.1)?

(Q6) Determine two intervention goals based on the information received from Sarah’s ABC data and the FAST (in question 4).

(Q7) What intervention strategy would you implement with Sarah based on the function of her behavior? What does Tracey need to change as well? Ensure that it is a functionally equivalent behavior in that the replacement behavior meets the same function and consider teaching her alternative behaviors as well (Reference

4 Functions of Behaviour

		What It Does For Me	When Does it Happen
S Sensory		Provides preferred sensory experiences; behaviour feels good to do	Anytime, even when alone. Especially if I'm anxious
E Escape		Removes undesired activities or interactions	When task is too: hard, easy, boring, or scary
A Attention		Provides access to people or interactions	When I want social interaction
T Tangibles		Provides preferred items or activities	When I want a preferred item or activity

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Fig. 5.1 The four functions of behavior (Davis, n.d.)

Ethics Box 5.1, Behavior Analyst Certification Board, 2014). Use this Web site for assistance: http://www.apbs.org/files/competingbehav_prac.pdf

Ethics Box 5.1

Professional and Ethical Compliance Code for Behavior Analysts

- 4.07 Environmental Conditions that Interfere with Implementation.
 - (a) If environmental conditions prevent the implementation of a behavior-change program, behavior analysts recommend that other professional assistance (e.g., assessment, consultation, or therapeutic intervention by other professionals) be sought.
 - (b) If environmental conditions hinder implementation of the behavior-change program, behavior analysts seek to eliminate the environmental constraints or identify in writing the obstacles to doing so.

Reflection

(Q8) Looking at the assessments that Rachel implemented, is there any other assessments that you would include?

(Q9) Now that the results of the assessment are present, indicate how you will work with Tracey to develop the intervention goals and implement the program.

(Q10) As a Board Certified Behavior Analyst, how might you respond to Tracey’s request for an IBI program for Sarah? Could the behavioral supports offered by Rachel include both a one-to-one IBI program and broader behavior consultation? If so, how? If not, why not?

Additional Web Links

Functional Behavior Assessment

<http://www.ped.state.nm.us/RtI/behavior/4.fba.11.28.pdf>

Positive Behavior Support

<https://www.pbis.org>

Dimensions of Behavior

<http://www.aisd.net/aisd/Portals/14/Definitions%20and%20Examples%20of%20Dimensions%20of%20Behavior.pdf>

Target Intervention Goals

<http://bringingaba.com/2012/08/27/first-things-first-initial-goals-to-target-when-beginning-an-aba-intervention-program-for-young-children-with-asd/>

Data Collection Forms

<https://sites.google.com/a/ghaea.org/challenging-behavior-team/data-collection-resources-1>

CASE: iii-I2

Robina’s Data are WRONG; My EXPERIENCES are right

Setting: Community Age-Group: Preschool

LEARNING OBJECTIVE:

- Recognize the important role of data collection in the behavior consultation process, and critically evaluate the trustworthiness of measures of behavior.

TASK LIST LINKS:

- **Measurement**
 - (A-01) Measure frequency (i.e., count).
- **Identification of the Problem**
 - (G-04) Explain behavioral concepts using nontechnical language.
 - (G-06) Provide behavior-analytic services in collaboration with others who support and/or provide services to one’s clients.
- **Measurement**
 - (H-01) Select a measurement system to obtain representative data given the dimensions of the behavior and the logistics of observing and recording.
 - (H-02) Select a schedule of observation and recording periods.

- (H-03) Select a data display that effectively communicates relevant quantitative relations.
- (H-04) Evaluate changes in level, trend, and variability.
- (H-05) Evaluate temporal relations between observed variables (within and between sessions and time series).

- **Fundamental Elements of Behavior Change**

- (D-04) Use modeling and imitation training.

- **Specific Behavior-Change Procedures**

- (E-12) Use errorless learning procedures.

KEY TERMS:

- **Empiricism**

- In the field of ABA, empiricism refers to objectively gathering and examining evidence about the behavior under study, free of any influence from one’s own beliefs or opinions. For example, when selecting an intervention to support a behavior-change program, empirically supported interventions—treatments that have been demonstrated to be effective in rigorous peer-reviewed research—should be selected. Similarly, when implementing a behavior-change intervention, the effects of that intervention should be determined based on rigorous, reliable, and valid data collection and analysis methods. Any conclusions drawn about the effects of the intervention should be based on the data collected and not on the subjective opinions of those involved (Mesibov and Shea 2011).

- **Repeatability**

- Also referred to as “countability,” repeatability refers to measuring how many times a behavior is repeated within a period of time, for example, counting the number of time a behavior is displayed (Bicard et al. 2012; Johnston and Pennypacker 1993).

- **Science**

- Attempts to empirically gather and organize knowledge about a specific phenomenon under study. As a science, subjective hypothetical constructs from the explanations are removed (e.g., personal experience, the mind, and cognitive explanations) and instead use scientific processes of inquiry such as objective data collection and experimentation to empirically demonstrate relationships between variables (Fryling 2011).

- **Temporal Extent**

- When measuring behavior, temporal extent refers to recording the elapsed time of a response or the duration of the behavior (Springer et al. 1981; Johnston and Pennypacker 1993).

- **Temporal Locus**

- When measuring behavior, temporal locus refers to when, during a period of time, and in relation to other events, a behavior occurs, for example, recording response latency—how long after exposure to a certain event a behavior begins to occur; or measuring inter-response time—the elapsed time between instances of behavior (Springer et al. 1981; Johnston and Pennypacker 1993).

Robina’s Data Are WRONG; My EXPERIENCES Are Right

“Not again ...” sighed Robina’s mother. “I don’t know what is wrong with these people,” she said sharply to Robina’s dad, waiting by the phone to hear the news of the day from their recorded messages. “Seriously, I really question their judgment. We haven’t even been back to the after-school program to pick her up today, and they have left ... not one ...” she continued to listen to the recorded messages, “but THREE messages in the meantime. The program’s only TWO HOURS long! We haven’t seen ANY messages from the school in her knapsack, we haven’t had ANY problems with her at home. Her dance instructor never says a word about any so-called ‘behavior’ problems. Her respite program only has good things to say. I just don’t get it! Do you?” Robina’s father shrugged, *thinking* back to how difficult the preschool years had been for 6-year-old Robina, wondering if her mother had really forgotten what it was like. *When Robina was first diagnosed, he recalled, with not only a likely cognitive delay, but also an Autism Spectrum Disorder, it was one thing after another at her day care. I never want to go back to those days. But it seems like once everyone got used to her—and she got used to them—everything really settled down. Where we used to see screaming and lying on the floor and refused to do anything she was asked, we now get laughing and nods and that wonderful word, “Okay.” Even the transition to our school was fine. Given that it’s just down the street, Robina can get back and forth with just a little bit of help, and she loves the walk, her teachers, and the other students in her class ... the same kids she has grown up with around here. I kind of thought that this easy pathway for all of us would just keep on from here, but it seems like there is more than one bump in the road.*

“Well,” he responded aloud, “let’s see what they have to say face-to-face. You can tell me all the details of the phone messages as we walk.”

And when they entered the child-sized gates of the after-school program’s dedicated entrance area, one of the supervisors was waiting for them, with a very unhappy-looking Robina collapsed on the asphalt, legs in a vee, folded over face to the ground, hands over the back of her head. Robina’s parents locked eyes, knowing that the long day was not yet over.

Robina's mother walked Robina home to get supper started—one of Robina's favorite activities at home—and Robina's dad stayed on site to meet with the after-school supervisors for a meeting that was clearly going to happen right then. Seated together on the child-sized chairs around a small, round table, the childcare supervisor began: "Well, as you know from our messages, the main issue we are having with Robina's behavior here in after-school care is her pushing. I am sure you see this at home, as well. She has pushed at least half of our group of 12, and not just pushed the others, but literally pushed them over. She used to just put her hands on their chests and shove a little, but now she is pushing harder and more often. We are getting crying children, plus the other parents are calling with complaints. One of the things that happened after school today was that Robina pushed one of the other so hard that he fell backwards and landed right in our large bucket of building blocks. He is definitely going to be bruised, and we had to fill out an incident report, and of course call the other parents, too. I know we don't have much time, but we are really hoping that you will sign this referral today to get someone in from our head office to start helping Robina out with this very challenging behavior of hers."

Trying repeatedly to break into the ongoing diatribe and having no success, Robina's father took advantage of the pause, here, and attempted to respond in a way that would work for everyone, without showing his likely obvious and growing annoyance. "I agree with you that Robina should not be pushing, but we have actually not witnessed her pushing anyone at home or at respite care or even in her dance classes. So you are telling me this, and I believe you that there are probably problems, but I haven't yet seen any evidence of this. I don't think that you should be telling me about what other parents are saying, either. What I would like to see is something you can show me that proves this is happening. How about some **science**? I was taught in our parenting classes that the best way to tell future behavior is from past behavior. And we aren't having any problems with Robina. I think signing your paperwork today is probably a little premature, but I will take it home and talk it over with my family."

Feeling like they were left with little choice, the after-school care workers nodded their assent, smiled, and shook hands. The next day, though, they started to collect the evidence that they thought Robina's dad was seeking, hoping to show the frequency of Robina's problem behavior. Without a behavioral consultant to help them and to educate on important information and terms such as **temporal locus** and **temporal extent** and **repeatability**, they simply searched online and printed off some ready-made data collection charts. All staff members were shown this chart and were told all that they had to do was put a checkmark on the time and day that Robina pushed one of the other children—or an adult, and it was placed on the supervisor's desk so anyone could access it at any time. After a week, they had collected five sheets of paper, and each day had between three and nine checkmarks. They added up each day's number of pushes, wrote it at the top of each page, and circled it. This is what they presented to Robina's parents at their next meeting together.

Both of Robina's parents took these sheets of data, looked through them one by one, and then carefully laid them down back in order. "This is all very nice,"

responded Robena's mother, with some not so carefully disguised frustration evidence on her face and in her voice tone, "but it really doesn't tell me very much. Isn't pushing rather a normal thing for energetic young children? How much did the others push? I know you are trying hard, but this really doesn't convince me that there is a problem, or that I should sign your papers. I think that, just maybe, just maybe, we know our child better than you know how to collect data."

The Response: Principles, Processes, Practices, and Reflections

Principles

(Q1) Outline one measure based on repeatability, one based on temporal extent, and one based on temporal locus for the behavior difficulty displayed by Robina. Please explain what type of information each measure would provide and the strengths and limitations of each.

(Q2) If you were consulting to Robina's after-school care workers and her parents, which measure from those that you listed in question #1, would you recommend be implemented? Explain why.

Processes

(Q3) Outline at least two strengths and two limitations of the data collection process implemented by the after-school staff.

(Q4) Describe how you would address the limitations you identified in question#3?

Practice

(Q5) How would you respond to the question posed by Robina's parents: "*Isn't pushing rather a normal thing for energetic young children?*" Using the data sheet below, how might a data collection process with peers help you respond? Complete the form and present a response to the parents (Table 5.1).

(Q6) Attached is a graph of the data collected by Robina's after-school care workers. How might you interpret these data? What conclusions might you draw from the data? What questions does the data raise (Fig. 5.2)?

(Q7) How would you respond to the differences in perceptions of Robina's behavior held by her parents and her after-school program workers? How might a data collection process help you respond?

Reflection

(Q8) Addressing a behavior difficulty without first collecting data on the behavior in question poses a number of risks. Please identify at least two.

(Q9) The after-school workers were collecting data to prove that Robina’s behavior is a problem. Does this raise any ethical concerns? Please explain? What type of data collection process would you recommend so that the data are trustworthy and free from any biases (Reference Ethics Box 5.2, Behavior Analyst Certification Board, 2014)?

Ethics Box 5.2

Professional and Ethical Compliance Code for Behavior Analysts

- 2.11 Records and Data.
 - (a) Behavior analysts create, maintain, disseminate, store, retain, and dispose of records and data relating to their research, practice, and other work in accordance with applicable laws, regulations, and policies; in a manner that permits compliance with the requirements of this code; and in a manner that allows for appropriate transition of service oversight at any moment in time.
 - (b) Behavior analysts must retain records and data for at least seven (7) years and as otherwise required by law.

Look at the IOA calculator as a tool: <https://www.abainternational.org/journals/behavior-analysis-in-practice/supplemental-materials.aspx>

(Q10) How might a data collection process be a helpful tool in forming a cohesive team between Robina’s parents and her after-school workers?

Additional Web Links

Measuring Behavior

https://iris.peabody.vanderbilt.edu/wp-content/uploads/pdf_case_studies/ics_measbeh.pdf

Calculating IOA

<https://www.abainternational.org/media/31416/examplespreadsheet.pdf>

Data Collection Sheets

<http://www.behaviorbabe.com/datasheets.htm>

CASE: iii-I3

Let’s just get moving along!

Setting: Home Age-Group: School Age

LEARNING OBJECTIVE:

- Recognize the importance of both short-term behavior tactics to efficiently reduce problem behavior and longer-term programs focused on developing new skills.

TASK LIST LINKS:

- **Measurement**
 - (A-01) Measure frequency (i.e., count).
 - (A-03) Measure duration.
- **Experimental Design**
 - (B-02) Review and interpret articles from the behavior-analytic literature.
- **Fundamental Elements of Behavior Change**
 - (D-01) Use positive and negative reinforcement.
 - (D-02) Use appropriate parameters and schedules of reinforcement.
 - (D-05) Use shaping.
 - (D-07) Conduct task analyses.
 - (D-21) Use differential reinforcement (e.g., DRO, DRA, DRI, DRL, and DRH).
- **Specific Behavior-Change Procedures**
 - Use instructions and rules.
- **Identification of the Problem**
 - (G-01) Review records and available data at the outset of the case.
 - (G-04) Explain behavioral concepts using nontechnical language.
- **Assessment**
 - (I-05) Organize, analyze, and interpret observed data.
 - (I-06) Make recommendations regarding behaviors that must be established, maintained, increased, or decreased.
- **Intervention**
 - (J-10) When a behavior is to be decreased, select an acceptable alternative behavior to be established or increased.
- **Implementation, Management, and Supervision**
 - (K-03) Design and use competency-based training for persons who are responsible for carrying out behavioral assessment and behavior-change procedures.
 - (K-05) Design and use systems for monitoring procedural integrity.
 - (K-09) Secure the support of others to maintain the client's behavioral repertoires in their natural environments.

KEY TERMS:

- **Differential Reinforcement**
 - Differential reinforcement is a procedure within applied behavior analysis that is used to simultaneously increase desired behaviors while reducing problematic behaviors. This is accomplished by providing reinforcement to only

those behaviors that meet a predetermined criterion, and withholding reinforcement for behaviors that do not meet the criterion (Vladescu and Kodak 2010). For example, increasing a child’s in-seat behavior and decreasing his or her out-of-seat behavior are by only providing reinforcement for in-seat behavior and withholding reinforcement for out-of-seat behavior.

- **Shaping**

- Shaping is a technique within applied behavior analysis used to teach new behavior. This technique follows a systematic approach to prompt and reinforce predetermined successive approximations toward a target behavior (Alberto and Troutman 2006).

- **Successive Approximations**

- Within a shaping program, successive approximations are behaviors that are sequential steps toward a terminal behavior, or approximations of the terminal behavior. Over the course of a shaping program, reinforcement is stopped for less accurate approximations of the terminal behavior, and reinforcement is provided for more accurate approximations until the terminal behavior is reached (Cooper et al. 2007).

- **Terminal Behavior**

- Within a shaping program, the terminal behavior is the desired behavior that the program is working toward (Alberto and Troutman 2006), for example, gradually prompting and reinforcing the duration of child’s sitting behavior until the behavior reaches the desired 15-min duration. Sitting for 15 min, therefore, is the terminal behavior.

Let’s Just Get Moving Along!

“Seriously,” the parent said, with quite an upset tone to her voice, “they can’t even be in the room for five minutes together, and they are fighting. And I don’t mean sticking their tongues out or yelling at each other, though we get that, too.” She looked at her partner for confirmation. “But it’s rolling around on the ground, hands around each other’s necks. It’s kicking over boots in the hallway, and kicking each other. I just don’t get it at all. I didn’t act like this as a child. It’s just so frustrating! Everyone told me that having kids close together was a great idea, but it seems like it just making things worse. We should be able to put them on the same soccer team, for example, to make our schedules a little easier, but last time we tried that, we ended up with a bloody nose and an almost-broken arm.”

Iris, the behavior therapist nodded, made soothing sounds, took notes, and asked questions (though she hardly needs to do so). She was well familiar with the background story of this family. The same-gender parents had a rough yet successful start to parenting, sacrificing time, peace-of-mind, and much of their combined incomes with the happy addition of two boys to their family, born just 14 months apart.

“Don’t get me started on school, either! With Andre following Anton into Kindergarten in a few months, I anticipate disaster! It’s not like we have a choice. Our school only has one Kindergarten classroom: I guess that is what happens with life in a small town. I have already warned their teachers, but I don’t think they can begin to understand what it’s really like for us at home. They think Anton is an angel!”

“It sounds like it’s time to try something new,” Iris suggested. “Are you willing to make a few changes?”

With support from both parents firmly in place, Iris spent the next few days researching clinical cases in the applied literature. She was aware that, from time to time, the two brothers did engage in cooperative play, both within and outside their sibling dyad. She refreshed her memory about best practices for **shaping** behavior successfully and developed a program using shaping for the boys to teach the remaining essential skills of cooperative play and to gradually increase its duration.

The shaping program started with the level of cooperative play that both the boys could successfully engage in, and this duration was determined by the data that were collected. The data showed that Anton had more cooperative play skills than Andre, and he was able to engage in cooperative play for a longer period of time. Iris noted that this was likely due to being 14 months older and having more experience in the classroom setting. Iris’s program broke down each step of cooperative play, and then, reinforcement was delivered. Once the boys were able to demonstrate the next step of play, the therapist or parent would reinforce their behavior. When they went back to a level of play that they had previously mastered, **differential reinforcement** was provided, whereby the lower level was no longer reinforced, but the next step of play was required for the same level of reinforcement.

During a follow-up consultation visit, Iris reviewed a graph, showing the data that have been collected to date from Anton and Andre’s parents, the preschool instructors, and the Kindergarten teachers. While their parents could clearly appreciate the progress that was being made, it was pretty clear as well that they were very enthusiastic about the next steps in the shaping program and expressing frustration that even though the graph shows progress, everything seems to be moving slowly. *Let’s just get moving along!* was the clear theme of the consultation. Iris left a little frustrated, already trying to work out how to explain to the parents in this situation that behavior change is a process, and that systemic, long-term change takes time and practice, but is well worth it.

The Response: Principles, Processes, Practices, and Reflections

Principles

(Q1) In the situation with Andre and Anton, list two benefits and two limitations of a shaping program?

(Q2) What are three benefits of a reinforcement-based approach, such as the shaping program, as compared to one based solely on extinction or punishment (Reference Ethics Box 5.3, Behavior Analyst Certification Board, 2014)?

Ethics Box 5.3

Professional and Ethical Compliance Code for Behavior Analysts

- 4.08 Considerations Regarding Punishment Procedures.
 - (a) Behavior analysts recommend reinforcement rather than punishment whenever possible.
 - (b) If punishment procedures are necessary, behavior analysts always include reinforcement procedures for alternative behavior in the behavior-change program.
 - (c) Before implementing punishment-based procedures behavior analysts ensure that appropriate steps have been taken to implement reinforcement-based procedures unless the severity of dangerousness of the behavior necessitates immediate use of aversive procedures.
 - (d) Behavior analysts ensure that aversive procedures are accompanied by an increased level of training, supervision, and oversight. Behavior analysts must evaluate the effectiveness of aversive procedures in a timely manner and modify the behavior-change program if it is ineffective. Behavior analysts always include a plan to discontinue the use of aversive procedures when no longer needed.
- 4.09 Least Restrictive Procedures
Behavior analysts review and appraise the restrictiveness of procedures and always recommend the least restrictive procedures likely to be effective.

Processes

(Q3) Below is a sample of ideas that are involved in preschool cooperative play. Write out the task analysis for one aspect of cooperative play for one of the boys (Table 5.2).

(Q4) Based on the task analysis above, outline how you would differentially reinforce each successive approximation of each behavior in your task analysis to get to the terminal behavior. Identify the reinforcer used on the current behavior that has not yet been mastered and the previous behavior that has been mastered.

Table 5.2 Example of behavior involved in preschool-aged cooperative play (Best Start Expert Panel on Early Learning, 2007; Cecchini, 2008)

Types of cooperative play	Examples of cooperative play
<ul style="list-style-type: none"> • Allow interaction with other children and manipulation of objects between play • Being a part of setting the rules for play and asking others to join in • Playing a game together that involves cooperating with one another to achieve an outcome • Vote: Have a vote with the group to decide which course of action to take 	<ul style="list-style-type: none"> • Set up the setting so that children can engage in different activities where they are facing one another • Have children work together to achieve a task such as cleaning up an area, raking leaves, or building a tower • Think about creating activities and engaging with children to create ideas that promote cooperation

Practice

(Q5) Given your task analysis above, write the shaping program using the attached template (Table 5.3).

Table 5.3 Example skill acquisition template

Skill Acquisition:	
Start Date:	Mastery Date:
ABLLS-R Criteria:	
VB-MAPP Milestone:	
Objective:	
Materials:	
Discriminative Stimulus (SD):	
Error Correction:	
Mastery Criteria:	
Data Collection Guidelines:	
General Teaching Procedures and Notes:	
Prompt Hierarchy and Procedure:	
Skill Acquisition Procedure	

(Q6) Given your shaping program, how would you teach the parents how to run the program and what type of data would you have them collect. Describe the training program. Make a data collection sheet for the family.

(Q7) Provide three examples of how you would generalize this skill into other environments. How would you teach this?

Reflection

(Q8) Although sustainable behavior change takes time, Andre and Anton's parents expected a "quick fix" with immediate results. How might you address this? Explain how you might balance the need for a quick reduction in problematic behavior, with a longer-term skill building-based approach to addressing the presenting behavior difficulties?

(Q9) Why might it be important to celebrate small successes with Andre and Anton's parents along the way to their larger goal of sustainable behavior improvements in their children's behavior? How might this be accomplished?

(Q10) Andre and Anton's parents appear to believe that their children should be the focus of Iris's behavior-change program. Would you agree? How might you respond to the assertion that in order to change a child's behavior, behavior change must first occur in adults' behavior?

Additional Web Links

Shaping

<http://www.txautism.net/uploads/target/Shaping.pdf>

Task Analysis <http://www.erinoakkids.ca/getattachment/Resources/Growing-Up/Autism/Applied-Behaviour-Analysis/ABA-for-Families-Task-Analysis.pdf.aspx>

CASE: iii-I4

When is "ENOUGH"?

Setting: School **Age-Group:** Preschool

LEARNING OBJECTIVE:

- Interpret graphic displays of behavior data and utilize the findings to inform and guide decisions in applied behavior analysis research and practice.

TASK LIST LINKS:

- **Measurement**
 - (A-13) Design and implement discontinuous measurement procedures (e.g., partial and whole interval, and momentary time sampling).
- **Experimental Design**
 - (B-06) Use changing criterion designs.

- **Behavior-Change Considerations**
 - (C-03) State and plan for the possible unwanted effects of extinction.
- **Fundamental Elements of Behavior Change**
 - (D-01) Use positive and negative reinforcement.
 - (D-03) Use prompts and prompt fading
 - (D-18) Use extinction
 - (D-21) Use differential reinforcement (e.g., DRO, DRA, DRI, DRL, and DRH).
- **Behavior-Change Systems**
 - (F-02) Use token economies and other conditioned reinforcement systems.
 - (F-03) Use direct instruction.
- **Measurement**
 - (H-01) Select a measurement system to obtain representative data given the dimensions of the behavior and the logistics of observing and recording.
 - (H-02) Select a schedule of observation and recording periods.
 - (H-03) Select a data display that effectively communicates relevant quantitative relations.
 - (H-04) Evaluate changes in level, trend, and variability.
- **Assessment**
 - (I-01) Define behavior in observable and measurable terms.

KEY TERMS:

- **Data Path**
 - When data points on a line graph are connected with a straight line, a data path is created that highlights the level and trend of the displayed data. In ABA, the data path is a central focus when interpreting and analyzing graphic displays of data (Cooper et al. 2007; Kahng et al. 2010).
- **Graph**
 - A graph is a visual representation of data. In Applied Behavior Analysis (ABA), graphic displays of behavior are used to document and communicate the occurrence of selected target behaviors. Graphs are also used to provide an at-a-glance summary of data collected and to show changes in behavior before, during, and after the introduction of a behavior-change tactic. Graphs are the main process by which behavior analysts communicate the effects of an intervention (Kahng et al. 2010; Dixon et al. 2009).

- **Visual Analysis**

- Behavior analysts rely on graphic displays of behavior data to summarize, communicate, and interpret measurements of observable behavior. In ABA, the primary method of determining the extent to which meaningful changes in behavior are occurring is by visually analyzing graphic displays of behavior. This involves identifying the level (value on the vertical axis where data points converge), trend (overall direction of the data collected), and variability (extent to which multiple measures of behavior produce similar outcomes) of the data displayed before, during, and after a behavior-change program has been introduced (Kahng et al. 2010)

- **X-axis**

- On a simple line graph, the x-axis is the horizontal axis, also called the abscissa. In ABA, this axis typically represents the passage of time (Cooper et al. 2007).

- **Y-axis**

- On a simple line graph, the y-axis is the vertical axis, also called the ordinate. In ABA, this axis typically represents a measureable dimension of behavior (Cooper et al. 2007).

When Is “ENOUGH”?

Ms. Lafferty slumped at her cubicle in the staff room, after leaving her new-to-her grade four classroom as soon as the last student exited the school. She lifted her hand to rub her face in despair, and ended up wiping sweat from her brow and neck, even though it was a fairly cool winter day and she had not just been teaching physical education. *It's stress! I am stress sweating!* she concluded, grimacing as she made her way across the staffroom to wash her hands and face with soap and cool water. *Why did I think that taking over this group of 9-year-olds and 10-year-olds within four weeks until the end of the school year was a good idea? I just can't seem to get their attention, and when I do I can't keep it!* Pausing as she exited the washroom, she made a snap decision and turned left instead of her usual right, heading down the hallway to visit the school's behavior consultant. *How lucky we are to have this person on our staff! And how lucky we are again that our principal has an open-door policy with referrals. Good thing I was paying attention at my first (and maybe last) staff meeting.*

She only had to wait about 10 min before the behavior consultant showed up with a smile, clipboards in one hand, her laptop in the other. “Ms. Lafferty!” The consultant—Miss King—called her by name, obviously happy to see her, but of course followed her greeting with an inquiring question, “What’s up with you today?” The two educators entered the office and shut the door firmly behind them.

“Remember,” said Miss King, “what we talk about here is between you and me, unless there is a safety issue or other serious concern with our school that needs to be referred right away. So let’s talk.”

Reverting to first names now that they were out of hearing range of any lingering students, Ms. Lafferty began. “As you know, I got here only a few weeks ago. Since then, I have had no luck getting this class on track. The students spend far more time doing nothing than learning anything. They do not listen, they do not follow instructions, they do not complete tasks: they basically do not do anything I ask. It’s not just one or two students. It’s pretty much everyone! But they do seem to have a really good time chatting it up with one another. I have to say there is lots of laughter in the room. It seems like a really strong community of students who get along together really well. But it’s like I am invisible, behind some sort of transparent wall, ineptly waving my arms around and mouthing words that nobody can hear—or nobody chooses to hear. I am like that proverbial fly on the wall: hearing everything but doing nothing that has any effect on what’s happening. They just flick me out of the way, metaphorically, of course. And that’s my rant. Now, can you help?”

“Of course I can help,” replied Miss King. “And today is your lucky day, even though I know it doesn’t feel like it right now. We have an ABA student starting tomorrow, and she is a superstar at data collection. She is here to learn about how to collaborate with teachers and to use her skills in the school environment. Since I know that the words ‘data collection’ aren’t everyone’s favorite words, I am pretty sure you would be happy to have her help, too. Am I right? We’ll start tomorrow, collect some baseline data, and look at implementing a class-wide behavior plan.”

The following morning before school began Miss King, Ms. Lafferty and the ABA student collaborated to develop an operational definition for both on-task and off-task behavior, as well as a plan for time sampling of these behaviors every fifteen minutes. The ABA student felt that baseline data were stable after four days and an unexpected field trip, and suggested another meeting with the behavior consultant, Miss King, Ms. Lafferty, and herself to create a plan for change. Together, they make a plan to implement direct instruction to try to increase on-task behavior, and Differential Reinforcement of Other Behavior (DRO), specifically focusing on verbal praise and token reinforcers for on-task behavior in the classroom. By the middle of next week, after only three more days at school, Miss Lafferty found herself back in the consultant’s office, looking for an update. As she rounded the doorway, she could see a **graph** projected on the wall over a piece of taped-up chart paper: “Is this it? Is it us?”

“It *is* all of you!” the behaviorists smiled enthusiastically. They began to explain the graph to Ms. Lafferty. “These four days, here is the baseline, that is, when we observed before we made any changes. As you can see, the levels of off-task behavior are quite high, but it is level and stable. Often behavior gets worse before it gets better when a behavior is put on extinction, that is, it is no longer being reinforced. This temporary increase in behavior is called an extinction burst. So basically, the same pattern happened every day. Then, you can see the phase line we drew here, showing that we started the intervention plan. These three days are after we started the intervention...you can see here that the line is way down below

the first one, and each of the data points—the small triangles—show how things have changed since then. The first day must have been hard, because you can see that first data point is really high. But the last two days have been much better. You are doing really well! Each day so far, the off-task behavior in your class is decreasing. That’s great news and shows us, already, that what you are doing is working!”

Caitlyn interrupted, “Well, to be honest, I don’t know about that. I came to see you today because I really feel like nothing has changed. I really feel like it’s not working! When can we try something new?”

The Response: Principles, Processes, Practices, and Reflections

Principles

(Q1) Differential Reinforcement of Other Behavior (DRO) involves delivering reinforcement when the target behavior has not occurred for a specific period of time and reinforcing other behaviors with the absence of the target behavior (Mayer et al. 2014). Explain why this approach might be helpful for Ms. Lafferty.

(Q2) Looking at the attached graph of data collected in Caitlin’s classroom. Please explain the level, variability, and trend in baseline data and discuss what your next step would be based on the data collected. Would you have continued to collect additional baseline data points or would you have introduced your intervention program as was done in the graph? Explain your decision (Fig. 5.3).

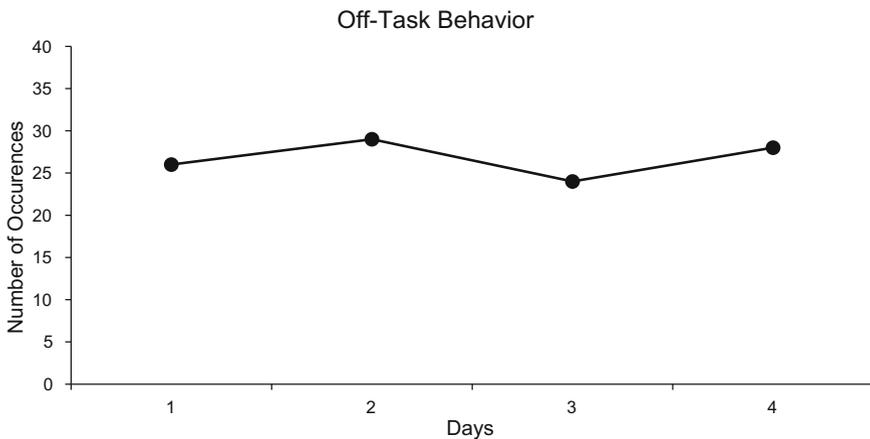


Fig. 5.3 Graph of off-task behavior in Ms. Lafferty’s classroom

Processes

(Q3) Draw the graph that was explained in the story above. Please ensure that all of the components of a graph listed below are included and labeled:

- x-axis,
- y-axis,
- condition change lines/phase lines,
- condition labels,
- data points,
- data path, and
- graph title.

(Q4) Outline at least 3 benefits of constructing graphic displays of behavior data (Reference Ethics Box 5.4, Behavior Analyst Certification Board, 2014).

Ethics Box 5.4

Professional and Ethical Compliance Code for Behavior Analysts

- 3.01 Behavior-Analytic Assessment.
 - (a) Behavior analysts conduct current assessments prior to making recommendations or developing behavior-change programs. The type of assessment used is determined by client's needs and consent, environmental parameters, and other contextual variables. When behavior analysts are developing a behavior reduction program, they must first conduct a functional assessment.
 - (b) Behavior analysts have an obligation to collect and graphically display data, using behavior-analytic conventions, in a manner that allows for decisions and recommendations for behavior-change program development.

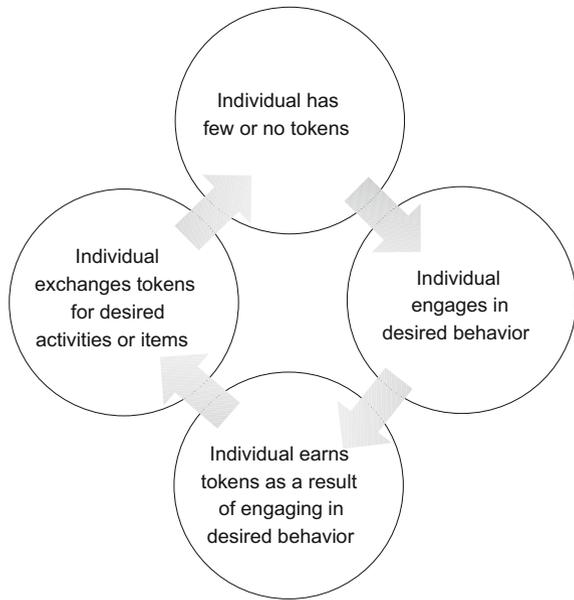
Practice

(Q5) Write a DRO program for Ms. Lafferty and outline how you might approach training Ms. Lafferty in the delivery of this program. How might you determine when she has mastered the delivery of the program?

(Q6) Write an operational definition for both off-task and on-task behavior. Why is it important for Ms. Lafferty to have clear definitions of these target behaviors?

(Q7) A token economy involves delivering tokens that are symbolic representations of a reinforcer in response to displays of the target behavior, and then exchanging tokens earned for preferred items, activities, or privileges (Alberto and Troutman 2013). How might a token economy, used in collaboration with a DRO program, be helpful to Ms. Lafferty? Indicate the teaching steps in delivering the token system, so that the tokens become conditioned reinforcers (Fig. 5.4).

Fig. 5.4 The cycle of a token economy



Reflection

(Q8) How would you respond to Ms. Lafferty’s concerns? Why might there be a discrepancy between what the data is showing and Mrs. Lafferty’s perception of what is happening in the classroom?

(Q9) Time sampling involves measuring the presence or absence of the target behavior within specific time intervals, such as breaking a 30-min behavior observation period into 5-min intervals (Mayer et al. 2014). Examples include momentary time sampling (e.g., recording if the behavior is occurring at the moment each time interval ends), partial-interval time sampling (e.g., recording if the behavior occurred at any time during the interval), and whole-interval time sampling (e.g., recording if the behavior occurred throughout the entire interval). Why might time sampling be a useful approach for Ms. Lafferty? Outline at least one advantage and one limitation of using each method of time sampling listed above as a method for data collection.

(Q10) When planning for this intervention and using a DRO procedure, the unwanted behavior is put on extinction. How would you plan for the side effects of an extinction burst with Ms. Lafferty?

Additional Web Links

Differential reinforcement

<http://iris.peabody.vanderbilt.edu/module/bi2/cresource/q4/p05/#content>

Time sampling

<https://my.vanderbilt.edu/specialeducationinduction/files/2013/07/DC.Time-Sampling.Sample.pdf>

CASE: iii-I5

Big Changes for Bart, but Perhaps Little Value

Setting: Home Age-Group: Preschool

LEARNING OBJECTIVE:

- Apply principles and processes of applied behavior analysis to support the development of socially mediated behavior in a youth with Asperger's Syndrome.

TASK LIST LINKS:

- **Fundamental Elements of Behavior Change**
 - (D-04) Use modeling and imitation training.
 - (D-05) Use shaping.
 - (D-06) Use chaining.
 - (D-09) Use the verbal operants as a basis for language assessment.
 - (D-13) Use intraverbal training.
 - (D-21) Use differential reinforcement (e.g., DRO, DRA, DRI, DRL, and DRH).
- **Specific Behavior-Change Procedures**
 - (E-03) Use instructions and rules.
- **Identification of the Problem**
 - (G-03) Conduct a preliminary assessment of the client in order to identify the referral problem.
 - (G-04) Explain behavioral concepts using nontechnical language.
 - (G-06) Provide behavior-analytic services in collaboration with others who support and/or provide services to one's clients.
- **Measurement**
 - (H-03) Select a data display that effectively communicates relevant quantitative relations.
 - (H-04) Evaluate changes in level, trend, and variability.
 - (H-05) Evaluate temporal relations between observed variables (within and between sessions, and time series).
- **Intervention**
 - (J-02) Identify potential interventions based on assessment results and the best available scientific evidence.
 - (J-11) Program for stimulus and response generalization.

(J-14) Arrange instructional procedures to promote generative learning (i.e., derived relations).

KEY TERMS:**• Chaining**

- Chaining is a procedure within Applied Behavior Analysis (ABA) that can be used to teach a long sequence of behaviors (e.g., making a sandwich). The sequence of behaviors is broken down into smaller discrete behaviors, and each behavior is taught using prompting (to increase the likelihood of occurrence) and reinforcement (to increase the future frequency of the behavior). The discrete behaviors are then put together to form a “chain.” When making a sandwich for examples, each step or behavior in the process would be taught (e.g., get a plate from the cupboard, put plate on counter, get the bread, etc...) until all of the steps involved are learned and the “chain” can be independently completed in proper sequence (Granpeesheh et al. 2009).

• Generalization

- One of the defining characteristics of ABA is generality, meaning that a behavior change lasts over time and continues after an intervention has been withdrawn, occurs in environments in which training did not occur, and brings about changes in behaviors not targeted by an intervention (Baer et al. 1968, 1987). In most intervention programs, a behavior change is not considered mastered until evidence of generalization has been documented.

• Imitation

- Imitation is any physical movement that evokes an imitative behavior that immediately follows, resembles, and is controlled by the modeled behavior. For example, a child watching a video and then immediately imitating the same behavior is being modeled in the video (Cooper et al. 2007).

• Intraverbal Training

- An intraverbal occurs when a speaker differentially responds to the verbal behavior of others (Cooper et al. 2007), for example, answering the question “where do you live?” with the response “1234 Avenue Road,” or providing a comment (a different comment than the comment that the speaker provides) on an item or an experience in response to hearing another’s comments. Intraverbal training focuses on developing reciprocal verbal exchanges (e.g., the foundation of a conversation) by bringing one’s verbal responses under the control of another’s verbal behavior (e.g., Ingvarsson et al. 2007)

• Verbal Behavior

- Verbal behavior has been defined by Skinner as “behavior that is reinforced through the mediation of another person’s behavior” (Skinner 1957 in Sundberg and Michael 2001 p. 701). This can be differentiated from

nonverbal behavior that is reinforced through direct contact with the physical environment (Sundberg and Michael, 2001). Within ABA, language is seen as a learned behavior, developed through the same principles and processes as nonlanguage behavior (e.g., reinforcement, punishment...).

Big Changes for Bart, But Perhaps of Little Value?

Eleven-year-old Bartholomew or Bart—or a range of other not-as-complimentary rhyming names used by his peers—was often called a “warrior” by his father. Although Bart’s dad used this term in a kindly way, Bart really was a playground warrior, at least up until about midway through grade three, when his peers stopped tormenting him, and started ignoring him, instead, as they were drawn into mutually agreeable conversations about music trends, sports, and television shows, all of which was highly disinteresting to Bart. Over grade three and grade four, and past his eleventh lonely birthday with only his little brother Stewart around for company, Bart seemed to have fewer and fewer social interactions with his peers. His dad noticed this was also becoming true at home and, over the past several months, had been becoming increasingly concerned about Bart’s social skills. When Bart got up in the morning, and when he returned home from school, he preferred to engage in solitary activities, with hardly a morose “Hi,” before he disappeared into his bedroom to work on his complex engineering tasks. The most conversation he voluntarily elicited with his dad, these past six months or so, was to ask for a ride to the library so he could print his gears, gadgets, and other elements with their free 3D printer.

It was this almost complete lack of social interaction that brought Bart and his dad back to the ABA therapists. After a fruitless search for a business card that had been provided to him years ago when Bart was first diagnosed with an Autism Spectrum Disorder (at the time, called Pervasive Developmental Disorder-Not Otherwise Specified), Bart’s dad went online and found the name of the service in the archives of his email. Not wanting to have a complex conversation by email, he picked up the phone, got in touch with the clinical coordinator of *Step-by-Step Disability Services*, and told them his story. By the time another week had passed, Bart and his dad had a late morning appointment to visit the clinic and start to work on his conversational skills. “It’s unfortunate that we are only open during the day,” said the therapist, “but I think you will find that learning conversational skills will support Bart in his school success, rather than taking away from his learning. It will be worth it! Let’s start with appointments twice a week, in the mornings when our adolescent program is taking place, and then go from there. Bart will be back at school by recess time, and he can practice what we have learned together with his peers at school right away.” After Bart’s therapist completed a thorough assessment of Bart’s **verbal behavior** and social skills, Bart’s dad and his therapist agreed on the specific details of Bart’s ABA program, and began.

After less than six weeks, Bart’s dad was back on-site for a follow-up meeting. A little nervous, he waited in the child-sized waiting room until he was called into to meet with the obviously delighted therapist. “I am happy to report,” she began, “that Bart has been doing wonderfully well in our sessions. Like you mentioned about his social behavior at home and at school, he was indeed quite quiet at the beginning. I think the best word I could use to describe him would have been “avoider.” He was avoiding everything! But from the time that he discovered our electronics cache that we keep meaning to recycle, he has been nonstop talk. It has been quite easy to teach new behaviors using **imitation** and **chaining**. At the same time, we have been able to shape his behavior into not only answering questions within our goal of two sections, but also **intraverbal training** and engaging in three or more conversation turns with both the other therapists and his same age peers in our setting with appropriate amounts of information being shared. Unlike before, he is regularly initiating conversations, too. I have some data and graphs here to show you just how much his skills have improved. It is already time to set new goals.” After looking at the visual depictions that Bart’s therapist showed to his dad, and discussing and celebrating Bart’s progress in the clinical setting, the conversation got a little harder. “What are you hearing about school? And what about home?” asked the therapist?

“In all honesty,” replied Bart’s dad, “home has been pretty status quo. And so has school. I have actually been pretty worried that you were going to tell me that nothing good has been going on at your sessions, either! So I am quite relieved, really, that you are seeing all sorts of new skills in Bart. I have been asking his teachers to watch him a little more closely when it comes to conversational skills, and they are telling me that he won’t say much, even when other people approach him, he won’t talk to anyone else first, and sometimes he even turns around and walks off while people are in the process of trying to get his attention. It’s pretty frustrating.”

This phrase was one that Bart’s therapist used later that day, when debriefing with her clinical supervisor. “It’s so frustrating!” she began. “I have done quite a few assessments, I have been tracking his skills, his growth, his mastery, and his movement toward independence, but he is only doing it here. Part of it is probably my fault. I thought it was too early to plan for **generalization** to different people and to different settings. I thought we would see some changes everywhere. It is important to pick behaviors so they are important and meaningful in everyday life far beyond the room where we train. So, what’s wrong, and what’s next? What’s the key to success?”

The Response: Principles, Processes, Practices, and Reflections

Principles

(Q1) Use the attached list of specific behaviors identified by Bart’s father as skills he would like to see Bart develop. Using the relevance of behavior rule as a guide, select two behaviors as priorities for an intervention program. Explain your selection (Table 5.4).

Table 5.4 List of specific behaviors Bart's dad would like him to acquire

Conversation skills	Initiating conversation
	The give and take of conversation
	Appropriately ending a conversation
	Conversing about things that are not special interests
Conflict resolution	Compromise
	Being open to other ideas (flexibility)
	Controlling emotions
Friendship skills	Nonverbal communication (reciprocating a smile)
	Keeping promises
	Being kind
	Being open to friendship

(Q2) For the behaviors selected in question 1, outline how, once mastered in a treatment setting, you would work to support Bart with the generalization of the behavior. How will you determine when mastery of the behavior has been achieved?

Processes

(Q3) Using the following article as a guide, select one of the training procedures to develop an outline of an intraverbal training program for one of the behaviors chosen for Bart. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3297336/>

(Q4) Outline a systematic and progressive generalization process for the intraverbal program outlined in question #3.

Practice

(Q5) Why might there be differences in reports of Bart's program at home, in the treatment setting, and at school? How could you work with other individuals to promote communication and consistency between home, the treatment setting, and school?

(Q6) Provide a summary of the intraverbal training program, using nontechnical behavioral analytic terms that individuals in other settings can understand and apply with Bart (Fig. 5.5).

(Q7) Why is consistency between home, the treatment setting, and the school important for Bart's short-term and long-term progress? How might this consistency be measured? What indicators would suggest that consistency has been established and maintained over time?

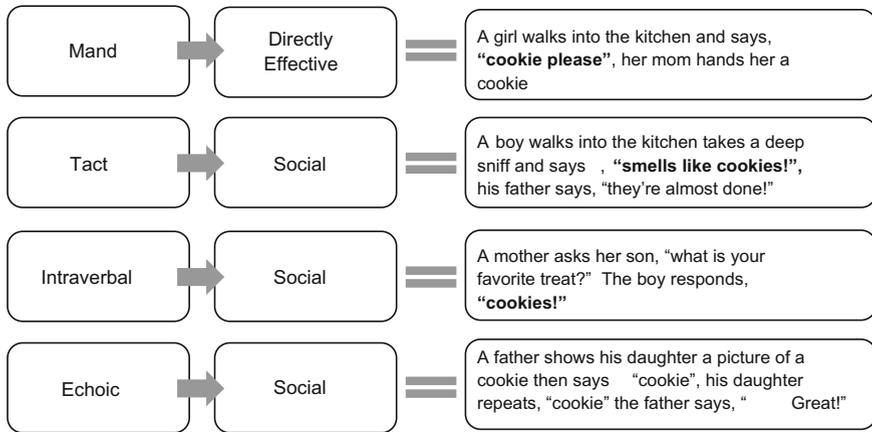


Fig. 5.5 The four verbal operants, the consequences to those operants and an example of each operant

Reflection

(Q8) Bart’s father blames himself for some of Bart’s difficulties. How might you respond to comments of this nature made by Bart’s father?

(Q9) An applied behavior-analytic understanding of language development differs from other theories of language development that might emphasize biological and cognitive aspects before environmental. As a behavior consultant trained in a verbal behavior approach, how might you work collaboratively with others from other disciplines (e.g., speech and language therapist, cognitive psychologist, and developmental psychologist) to develop a single-supportive multidisciplinary team and program for Bart (Reference Ethics Box 5.5, Behavior Analyst Certification Board, 2014)?

Ethics Box 5.5

Professional and Ethical Compliance Code for Behavior Analysts

- 2.03 Consultation.
 - (a) Behavior analysts arrange for appropriate consultations and referrals based principally on the best interests of their clients, with appropriate consent, and subject to other relevant considerations, including applicable law and contractual obligations.
 - (b) When indicated and professionally appropriate, behavior analysts cooperate with other professionals in a manner that is consistent with the philosophical assumptions and principles of behavior analysis, in order to effectively and appropriately serve their clients.

(Q10) A school staff member is questioning the importance of emphasizing the development of social skills for Bart and, instead, believes that Bart can be guided toward activities and later employment in positions in which he can work independently, and utilize his strengths, skills, and interests. Do you agree? Why or why not? How would you respond to this statement?

Additional Web Links

Social skills—Autism internet modules

http://www.autisminternetmodules.org/user_mod.php

http://www.gov.pe.ca/photos/original/BldSocSkills_11.pdf

Social Skills Assessment

<http://www.scaswebsite.com/docs/SST-resource-book-low.pdf>

Generalization

<http://www.erinoakkids.ca/getattachment/Resources/Growing-Up/Autism/Applied-Behaviour-Analysis/ABA-for-Families-Generalization.pdf.aspx>

References

- Alberto, P. A., & Troutman, A. C. (2006). *Applied behavior analysis for teachers* (7th ed.). Upper Saddle River, NJ: Pearson Education Inc.
- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 1*(1), 91–97. <http://doi.org/10.1901/jaba.1968.1-91>
- Baer, D. M., Wolf, M. M., & Risley, T. (1987). Some still-current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 20*, 313–327.
- Behavior Analyst Certification Board (2014). *Professional and ethical compliance code for behavior analysts*. Retrieved from <http://bacb.com/wp-content/uploads/2016/01/160120-compliance-code-english.pdf>
- Best Start Expert Panel on Early Learning. (2007). *Early learning for every child today: A framework for Ontario early childhood settings*. Retrieved from: <https://www.edu.gov.on.ca/childcare/oelf/continuum/continuum.pdf#page=24>
- Bicard, S. C., Bicard, D. F., & The IRIS Center. (2012). *Measuring behavior*. Retrieved from https://iris.peabody.vanderbilt.edu/wp-content/uploads/pdf_case_studies/ics_measbeh.pdf
- Cecchini, M. E. (2008). *Encouraging cooperative play*. Retrieved from http://www.earlychildhoodnews.com/earlychildhood/article_view.aspx?articleid=707
- Cooper, J.O., Heron, T.E., & Heward, W.L. (2007). *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Pearson
- Davis, A. (n.d.). *4 functions of behaviour*. Retrieved from: <http://in1.ccio.co/sB/w2/OC/c0c8d6261e5bcbe325bc445c85518241.jpg>
- Dixon, M. R., Jackson, J. W., Small, S. L., Horner-King, M. J., Lik, N. M. K., Garcia, Y., et al. (2009). Creating single-subject design graphs in microsoft excel™ 2007. *Journal of Applied Behavior Analysis, 42*(2), 277–293.
- Filter, K. J., & Nolan, J. D. (2012). A function-based classroom behavior intervention using non-contingent reinforcement plus response cost. *Education & Treatment of Children, 35*(3), 419+. Retrieved from: http://go.galegroup.com.ezpxy.fanshawec.ca/ps/i.do?id=GALE%7CA301649976&v=2.1&u=ko_acd_fc&it=r&p=AONE&sw=w&asid=9e8573f7e23c3536ef135d7b5b160258

- Fryling, M. (2011). The impact of applied behavior analysis on the science of behavior. *Behavior and Social Issues, 19*, 24–31.
- Granpeesheh, D., Tarbox, J., & Dixon, D. (2009). Applied behavior analytic interventions for children with autism: A description and review of treatment research. *Annals of Clinical Psychiatry, 21*(3), 162–173.
- Ingvarsson, E., Tiger, J., Hanley, G., & Stephenson, K. (2007). An evaluation of intraverbal training to generate socially appropriate responses to novel questions. *Journal of Applied Behavior Analysis, 40*(3), 411–429.
- Johnston, J., & Pennypacker, H. (1993). *Strategies and tactics for human behavioral research* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Kahng, S. W., Chung, K. M., Gutshall, K., Pitts, S. C., Kao, J., & Girolami, K. (2010). Consistent visual analyses of intrasubject data. *Journal of Applied Behavior Analysis, 43*(1), 35–45.
- Kelly, M., Shillingsburg, M., Castro, M., Addison, L., & LaRue, R. (2007). Further evaluation of emerging speech in children with developmental disabilities: Training verbal behavior. *Journal of Applied Behavior Analysis, 40*(3), 431–445.
- Mayer, G. R., Sulzer-Azaroff, B., & Wallace, M. (2014). *Behavior analysis for lasting change* (3rd ed.). Cornwall-on-Houston, NY: Sloan Publishing.
- Mesibov, G., & Shea, V. (2011). Evidence-based practices and autism. *Autism, 15*(1), 114–133.
- Skinner, B. F. (1957). *Verbal behavior*. New York: Appleton-Century-Crofts.
- Springer, B., Brown, T., & Duncan, P. (1981). Current measurement in applied behavior analysis. *The Behavior Analyst, 4*(1), 19–31.
- Sundberg, M., & Michael, J. (2001). The benefits of Skinner's analysis of verbal behavior for children with Autism. *Behavior Modification, 25*(5), 698–724.
- Vladescu, J. C., & Kodak, T. (2010). A review of recent studies on differential reinforcement during skill acquisition in early intervention. *Journal of Applied Behavior Analysis, 43*(2), 351–355.