

# Chapter 7

## Applying Principles of Behavior

**Abstract** This chapter outlines a process that early childhood professionals can use to address challenging behavior with behavioral strategies. The process begins with identifying a problem, considering why the problem is occurring, designing an intervention to address the problem, and using data to determine whether the intervention was effective in reducing the behavior and improving adaptive outcomes for the child.

**Keywords** Problem solving • ABC chart • Function of behavior • Triggers • Preventions • Replacement behavior

### The Problem-Solving Process

Problem solving is used to define a problem and identify interventions which have the highest likelihood of improving outcomes. Problem solving focuses on identifying the specific behavioral issues a child is engaged in (e.g., hitting, swearing, whining) versus focusing on a description of a set of problems, or a diagnosis (e.g., tantrums or ADHD). Problem solving, when used in conjunction with the behavior principles, will help early intervention professionals develop interventions aimed to improve behavior and relationships, and teach new skills. The problem-solving process involves four steps, which are illustrated in Table 7.1.

### *Problem Identification*

Problem identification involves 3 sub-steps described below:

*Step 1. Define the problem behaviorally.*

The first step involves describing the behavior in explicit terms, which is also referred to as the target behavior. Rather than indicating that a child has a tantrum,

**Table 7.1** The problem-solving process

Problem identification <i>Is there a problem? What is it?</i>	A problem is defined as the discrepancy between the child's skills compared to other children or established benchmarks or milestones
Problem analysis <i>Why is the problem happening?</i>	Problem analysis involves trying to understand why the problem exists, applying the knowledge to formulate an effective plan of care, and selecting interventions with a high likelihood of success
Intervention implementation <i>What can be done about the problem?</i>	With successful problem analysis, a clearly defined intervention will become apparent. The plan should specify <i>who</i> will do <i>what</i> , <i>when</i> it will be done, and <i>how</i> long it will be tried. Also included in this plan is a data collection method to complete the fourth step
Intervention evaluation <i>Did the intervention work?</i>	This step involves examining the data and deciding whether the intervention needs to continue, be modified, or be discontinued

one would describe the behaviors composing the tantrum, such as falling to the floor, taking off and throwing a shoe, and crying so that the behavior becomes clearer to others. Several methods might be used to help identify the target behavior, such as observations, screening tools, and other assessments.

*Step 2. Determine the replacement or desired behavior.*

After specifically describing the problem behavior, one needs to identify the desired behavior, which is also referred to as the replacement behavior. The replacement behavior is the behavior that you want to replace the problem behavior, because it will make the child more successful if he or she is in a similar situation in the future. As with defining problem behaviors, replacement behaviors must be clearly defined. Replacement behaviors should lead to the development of new skills in a child, rather than just being something that would make things more convenient for the parent or teacher. For example, choosing “being silent” as a replacement behavior for crying and screaming when frustrated, might not address the fact that the child needs to learn more effective ways to communicate his or her frustration and ask for help. In this instance, teaching a child to use words or signs would be a more effective replacement skill for screaming. The early intervention professionals can pull from their knowledge of behavioral milestones, such as those outlined in Chap. 1, to determine what prosocial behavior might look like at different ages.

*Step 3. Determine where the child's behavior falls in comparison to age expectations.*

Once steps one and two are completed, the final step becomes easy. The early intervention professional determines where the child's behavior falls in comparison to expectations or benchmarks for children this age. This information is helpful in determining exactly how much growth is actually needed for the child to reach the desired goal. Should it become apparent that the child's behavior is not atypical, as compared with benchmarks, an early intervention professional would not need to conduct any further analyses, but instead would use this as an opportunity to provide anticipatory guidance to caregivers regarding development. In the case that a child's behavior was not consistent with established benchmarks, an early childhood professional would proceed to problem analysis.

## ***Problem Analysis***

After defining the behavior in relation to what is developmentally expected, the problem analysis stage is used to develop hypotheses to explain why the child is not exhibiting the desired behavior. It can be useful to think about risks that might be contributing to the problems, such as factors specific to the child (e.g., genetic and medical conditions, vision or hearing difficulties) as well as those in the child's environment (e.g., parenting practices, poverty, language use at home). For example, if a child comes to you because he or she is not using spoken words to communicate, there could be several reasons why the child is not talking. If the child cannot hear, he or she may not be talking. Alternatively, if no one talks to the child all day, and he or she sits in front of a television, the child also may not be talking. In either case, more information may be needed to understand the behavior, and to sort out what might be happening to maintain the behavior, in order to develop a clearly defined intervention plan. The goal at this stage is to develop a set of hypotheses related to why a child is exhibiting the target behavior or is unable to perform the replacement behavior.

A variety of methods can be used to collect data on what factors are contributing to a problem behavior, including interviews and observations. An ABC chart is a method that can be used to organize information about environmental factors that may be contributing to challenging behaviors. The ABC's of the ABC chart stand for Antecedent, or the contexts surrounding the behavior such as who was present, what was happening, and when it occurred; Behavior, or detailed description of the behavior; and Consequence, or responses occurring after the behavior, which serve to maintain the behavior.

Figure 7.1 shows an example of an ABC-adapted chart taken from the Helping Our Toddlers, Developing Our Children's Skills Program (HOT DOCS; Armstrong, Lilly, Agazzi, & Williams 2010). In HOT DOCS, antecedents are referred to as "Triggers" and consequences as "Responses," to make it easier to comprehend. In addition, the HOT DOCS chart takes into account the *function* of the behavior, which is defined as the underlying motivation driving the behavior. Function may be simplified by determining what the behavior either helped the child to obtain or helped the child to escape. See Figure 7.2 for an example of the function of a behavior.

Once the behavior is clearly understood, the bottom half of the HOT DOCS chart can be used to document the interventions, and includes prevention strategies, new skills or replacement behaviors, and new responses which serve as reinforcers for the desired behavior, and consequences when the desired behavior does not happen. Figure 7.2 illustrates an example of determining the function of the behavior, based upon understanding triggers and consequences.

Another tool, the Functional Assessment Interview for Young Children (FAIYC; O'Neill et al., 1997), can provide very detailed information about complex behaviors that are not easily understood using approaches such as the ABC chart or the HOT DOCS chart. The FAIYC is a semi-structured caregiver interview, which also

Triggers	Behavior	Consequences
Describe events just before the behavior:	Specifically describe the behavior:  <b>Function?</b> To GET or GET OUT OF:	What happened following the behavior?
Preventions	New Skills	New Responses
What can be done to change or lessen the trigger(s)?	What skills are needed to perform the replacement behavior?	How will others now respond when the new behavior or problem behavior is displayed?

Fig. 7.1 HOT DOCS chart

Tony is a three year old with ASDs. He has a vocabulary limited to five words and two signs, which he uses inconsistently. Lately, Tony has begun hitting his mother, other children, and his daycare teacher. The hitting has become very frequent and he has hurt others. Tony hits when he does not want to do something, when he wants something, and sometimes he hits “playfully”, perhaps wanting attention. After he hits, several different things happen as a consequence: he is sent to time out, he is given a drink, or he is picked up and told to “Stop it”.

The HOT DOCS chart for Tony is summarized below:

Hypothesized Function	Triggers	Behavior	Consequences
Escape hand washing	Directed to wash hands	HITS	Put in Time Out and escapes hand washing
Wants drink	Sees mother at refrigerator	HITS	Mom looks down and gives him a drink
Wants attention	Sees peers in block area	HITS	Picked up by teacher and told to “Stop it.”

Fig. 7.2 Function of behavior

collects observational data, to thoroughly (1) examine the environmental context related to the challenging behavior, (2) observe the child's communication strategies, and (3) help provide information about the function or conditions that account for the behavior.

### ***Intervention Implementation***

Based upon the information gathered through problem analysis, interventions are selected for implementation. The intervention should be tied to the hypothesis that is most likely to be the reason for the problem. If the analysis was successful, a clearly defined intervention will become apparent. For example, if it is hypothesized that Tony hits to get attention, an appropriate intervention would be to teach Tony another way to get attention from his teacher (e.g., raising his hand, pointing to a picture of what he wants) (see Fig. 7.3 for some examples). An early intervention professional might decide to develop an individual-specific intervention, based upon behavioral principles that are known to prevent, increase, or decrease behaviors or utilize an already developed intervention package, such as those discussed in Chap. 5. In designing or selecting interventions for young children, one must be mindful of the following issues:

- Is this intervention suitable for young children?
- Does the intervention present unnecessary risks?
- Does the intervention require too much caregiver time?
- Does the intervention have negative side effects on other children in the family or in the classroom?
- Does the caregiver have the motivation and skills to implement the intervention?
- Does this intervention respect the cultural values of the family?

### ***Intervention Evaluation***

The last phase of problem solving with behavioral strategies involves evaluating the intervention that was developed to address the problem. This step is essential to ensure that the intervention is not only implemented, but that it is resulting in a positive outcome for the child and their family. Simple data collection procedures must be included in any intervention plan and will be discussed in more depth in Chap. 8. This process is often referred to as progress monitoring, because the data are used to document the intervention process.

Finally, any time an intervention plan is developed, the team should specify a timeframe to review the progress of the intervention. The data used to monitor the

### Problem Solving: Building New Skills

Bryan is a two year-old boy whose primary behavior concern is excessive tantrums. Through problem identification and problem analysis, the following information is generated:

- **Problem Identification:** Bryan tantrums 10 times a day, defined as screaming, throwing toys, crying, and laying down on the floor, and banging his head so hard that he has bruises. These episodes last from 20-35 minutes. The intensity and duration of the episodes make this behavior atypical. The desired replacement behavior is that Bryan will request more time when he does not want to stop an activity
- **Problem Analysis:** The tantrums are more likely to occur at home and during times where Bryan must transition from something he likes, such as playing with his toys, to something he does not like as much, like riding in the car to do errands. The early childhood professional and Bryan's mother think that their most valid hypothesis to explain Bryan's tantrums is that he wants to play longer and he often avoids the car ride and errands. In addition, he lacks the skills to ask for more time or tell his mother that he does not want to stop playing. More than 50% of the time, Bryan's mother gives in to Bryan; they stay home where he can continue to play. She sometimes uses time out, or picks him up and puts him in his car seat, depending on the time of day. The function of his behavior is to communicate "I do not want to stop playing."

To address this concern, the early childhood professional and parent agree to implement an intervention plan, the goal of which will be to teach Bryan to ask for "more play time" rather than screaming. To reinforce the use of this new skill, Bryan's mother will prompt him to request "more play time", and will allow him to play for "5 more minutes", and set a timer to signal the interval, and let him know when play time is over. If Bryan whined or cried, he would be prompted again to say "more play time", and given a few seconds to comply. All challenging behavior would be ignored, and cooperation praised. The end goal would be to eliminate the frequency of tantrums by teaching Bryan to use words for requests.

### Problem Solving: Shaping New Behaviors

William is a two-year-old boy who does not use words when he is with his parents. Although he has been enrolled in speech and is progressing with the therapist, he is not using words at home. To communicate his needs at home, William may hit a parent, shriek, or begin crying. William's mother, Tina, will often give in to William, to end the behavior problems, and is becoming increasingly less tolerant.

- **Problem Identification:** William will cry, shriek, or hit his mother throughout the day when he needs something. William has demonstrated a vocabulary and gestures appropriate for his age when working with the therapist such as pointing, or naming the object. The desired replacement behavior is for William to use his words at home.
- **Problem Analysis:** An ABC Chart was completed when William showed problem behaviors. Results showed that in almost 70% of the instances where William used one of his problem behaviors, Tina gave him what he wanted. It was hypothesized that this reinforced the use of these behaviors.

Tina and the early childhood professional determine that William needs to communicate his needs verbally at home. To accomplish this, Tina will offer him limited choices, model words for William and immediately reinforce any attempts to communicate with praise and the item he wants. At first, all verbal attempts are reinforced, and then upon consultation with the early childhood professional, Tina will gradually reinforce only attempts which are closer to the target word. She will also ignore any unwanted behaviors. Tina is to prompt William by saying "use your words" and provide enthusiastic attention for approximations toward the use of words.

**Fig. 7.3** Examples of application of problem solving utilizing behavioral strategies. Presents examples of how early childhood professionals use problem-solving with parents and caregivers

### Problem Solving: Using Social Stories

Laura is four-years-old and has been diagnosed with ASDs. A primary concern to Laura's mom, Diana, is that she cannot take Laura to the library and have her exhibit appropriate behavior. When going to the library, Laura tries to run away from Diana, screams, and lays down on the floor.

- **Problem Identification:** Laura does not display appropriate behaviors when entering the library with her mother. Instead she resists and engages in multiple behaviors to delay or prevent Diana and her from entering the library. The desired replacement behavior is that Laura holds her mother's hand to enter the library, and that she use words or pictures to express herself.
- **Problem Analysis:** After completing an FAIYC, the early childhood professional and Diana think that Laura becomes overwhelmed by several aspects of the library and tries to leave because she is uncomfortable in that situation. It is also possible that Laura does not have some of the skills needed to be in the library such as speaking quietly.

To address these problematic behaviors, Diana and the early childhood professional develop a social story which Diana reads several times a day with Laura. The story helps to prepare Laura for this experience by telling her what is going to happen, how she should behave, how she will feel, and how others will feel when she makes these good choices. In addition, they practice at home all of the skills included within the story such as entering the library, walking while in the library, choosing a book, and speaking in a whisper. As Laura masters specific skills, Diana takes her to the library and coaches Laura in these steps, using ample praise and rewards. Eventually, Laura becomes comfortable with the library and is able to remain calm when they visit it.

### Problem Solving: Using Time Out

Lilly is a three-year old girl who refuses to comply when told to clean up her toys. She ignores her mother's directions, continues playing, and may even begin whining. Her mother pleads with her to clean up the toys, saying "Can't you pick up your toys?" Lilly responds by throwing her toys at her mother. This behavior happens several times over the course of the day, and Lilly's mother is quite frustrated.

- **Problem Identification:** Lilly throwing toys at her mother when she is asked to clean up, and this occurs several times per day. The desired replacement behavior is for Lilly to follow her mother's directions to clean up toys within 20 seconds.
- **Problem Analysis:** These episodes are more likely to occur at home and during times when Lilly must transition to another activity that she may not enjoy. Using the HOT DOCS Chart, the early intervention professional and Lilly's mother decide that the function of the behavior is to escape, so Lilly misbehaves so that she can play longer. This behavior is maintained because Lilly gets to play longer, her mother eventually gives in, and may even pick up the toys herself.

To address this behavior, Lilly's mother is taught to give Lilly an effective command with a transition warning, "In 5 minutes, you will need to clean up your toys." Five minutes pass, signaled by the timer, and Lilly's mother says, "Please clean up your toys." If Lilly complies, her mother praises her. If not, her mother repeats the command, and informs Lilly that if she does not clean up her toys, she will go to the time out chair. If Lilly still does not follow this direction, her mother leads her to the time out chair and says "you did not clean up your toys when I asked you to, so you will have to sit in the time out chair. Stay here until I tell you that you can get up". Her Mother walks away, and waits for 3 minutes. She returns to Lilly and says "You are sitting quietly. Are you ready to clean your toys up now?" If Lilly says yes, she is directed to the toys, and mother acknowledges her efforts by saying "thank you for listening". If Lilly does not do this, the time out process starts again. After a few times of using this procedure, Lilly learns to follow her mother's directions because the process is clear, and she does not want to sit in time out.

Fig. 7.3 (continued)

intervention progress will make it clear whether the intervention should be continued, discontinued, or modified. Figure 7.3 presents examples of how early childhood professionals use problem-solving with parents and caregivers.

## Conclusions

This chapter describes the problem-solving process with the use of behavioral technology in designing and implementing interventions to address problem behavior and improve developmental functioning. The skillful use of the problem-solving model along with behavioral technology will help to articulate the problem, determine how to address the problem, and evaluate whether the intervention plan was successful in addressing the presenting concerns. As such, the resulting intervention plan will be based upon the best evidence available, and valuable time and resources will be wisely spent. The next chapters will detail the process of using data for progress monitoring to document the response to intervention.

## Assess Your Knowledge

*Use the questions below to assess your knowledge of the information presented in this chapter. Answers appear after the last question.*

1. Which of the following factors should be considered when developing your hypotheses about why a behavior is occurring?
  - a. Child
  - b. Family
  - c. Community
  - d. All of the above
2. Which of the following is NOT a good definition of a child's problematic behavior?
  - a. Spitting
  - b. Biting another child
  - c. Having a hissy fit
  - d. Laying on floor, arms hitting floor, and screaming for at least 2 min
3. When designing an intervention for a child, which of the following questions are most important to keep in mind?
  - a. Does the caregiver have the skills to implement it?
  - b. Will the child like the intervention?
  - c. How will other people view the child's behavior?
  - d. Can other people assist with the intervention?

4. To assist with the Problem Analysis step, one can use:
  - a. An ABC chart
  - b. The HOT DOCS chart
  - c. Behavior ratings
  - d. All options are correct
5. The four problem-solving steps include:
  - a. Problem Identification, Problem Analysis, Intervention Implementation, Intervention Evaluation
  - b. Problem Focus, Problem Analysis, Intervention Planning, Intervention Implementation
  - c. Problem Identification, Intervention Planning, Intervention Analysis, Evaluation
  - d. Problem, Naming the Problem, Intervention Planning, Intervention Analysis
6. What are the sub-steps within the Problem Identification stage?
  - a. Define a problem, develop expectations for age, measure differences in child's skills
  - b. Define the problem behaviorally, define a new behavior, compare a child's performance to baseline
  - c. Define the problem behaviorally, establish the desired level of behavior, compare a child's performance with age expectations
  - d. Define a problem, define a new behavior, compare a child's performance with age expectations
7. In developing an intervention, it is essential to understand the following:
  - a. Child's preferences for intervention
  - b. Child's diagnosis
  - c. Function of the behavior
  - d. Both a & b
8. Hypotheses about why the behavior occurs are generated during which stage?
  - a. Problem Identification
  - b. Problem Analysis
  - c. Intervention Implementation
  - d. Intervention Evaluation
9. The problem-solving process can stop when:
  - a. The problem identification stage shows the child is not behind his or her peers in development
  - b. The first intervention is completed
  - c. Problem analysis is finished
  - d. No intervention can be developed for a problem

10. If the problem has not been resolved by the end of the problem-solving process, one should:
- a. Immediately stop the current intervention
  - b. Revisit the problem identification step and begin the process again
  - c. Try a new intervention
  - d. Refer the child to a different practitioner

*Assess Your Knowledge Answers*

1) d 2) c 3) a 4) d 5) a 6) a 7) c 8) b 9) a 10) b