

PRT guidance from  
infancy to adulthood

# PIVOTAL RESPONSE TREATMENT

FOR **AUTISM  
SPECTRUM  
DISORDERS**  
SECOND EDITION

ROBERT L. KOEGEL  
LYNN KERN KOEGEL

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# **Pivotal Response Treatment for Autism Spectrum Disorders**

Second Edition

edited by

**Robert L. Koegel, Ph.D.**

Stanford University School of Medicine  
Stanford, CA

and

**Lynn Kern Koegel, Ph.D., CCC-SLP**

Stanford University School of Medicine  
Stanford, CA

*with invited contributors*

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Case studies are real people or composites based on the authors' experiences. Pseudonyms have been used and identifying details are altered to preserve confidentiality.

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## About the Authors

**Robert L. Koegel, Ph.D., Senior Researcher**, Stanford University School of Medicine, 401 Quarry Road, Stanford, CA 94305

Dr. Robert Koegel's research is in the area of autism, specializing in language intervention, family support, and school integration. He has published more than 200 articles and papers relating to the treatment of autism as well as several books on the treatment of autism and positive behavioral support. He is the Founding Editor of the *Journal of Positive Behavior Interventions*. Models of his procedures are used in public schools and in parent education programs throughout the world. He has trained many health care and special education leaders in the United States and abroad.

**Lynn Kern Koegel, Ph.D., CCC-SLP, Clinical Professor**, Stanford University School of Medicine, 401 Quarry Road, Stanford, CA 94305

Dr. Lynn Kern Koegel has been active in the development of programs to improve communication in children with autism, including the development of first words, grammatical structures, pragmatics, and social conversation. In addition to her published books and articles in the area of communication and language development, she has developed and published procedures and field manuals in the area of self-management and functional analysis that are used in school districts and by parents throughout the United States and have been translated in other major languages. Dr. Lynn Koegel is the author of *Overcoming Autism* and *Growing Up on the Spectrum* with parent Claire LaZebnik, published by Viking/Penguin and available in most bookstores. In addition, she appeared on ABC's hit show "Supernanny" working with a child with autism.

The Koegels are the developers of Pivotal Response Treatment, an empirically supported treatment for autism that focuses on improving motivation. The Koegels have been the recipients of many awards, including the first annual Children's Television Workshop Sesame Street Award for "Brightening the Lives of Children," the first annual Autism Speaks award for "Science and Research," and the International Association for Behavior Analysis (ABA) award for "enduring programmatic contributions in behavior analysis." Their work has also been showcased on ABC, CBS, NBC, PBS, and the Discovery Channel. The Koegels are current and past recipients of many federal, state, and private foundation grants and gifts for developing interventions and helping families with ASD.

## About the Contributors

**Kristen Ashbaugh, Ph.D.**

Stanford School of Medicine, Autism  
and Developmental Disabilities Clinic  
Stanford University  
Stanford, CA 94305

**Amy Barrett M.A.**

**Jessica Bradshaw, Ph.D.** Department of  
Psychology University of South  
Carolina Columbia, SC 29208

**Shereen J. Cohen, M.A.**

UCSB Koegel Autism Center University  
of California, Santa Barbara Santa  
Barbara, CA 93106

**Erin Engstrom, M.A.**

UCSB Koegel Autism Center University  
of California, Santa Barbara Santa  
Barbara, CA 93106

**Katarina Ford, M.A.**

UCSB Koegel Autism Center University  
of California, Santa Barbara Santa  
Barbara, CA 93106

**Grace W. Gengoux, Ph.D.** Department  
of Psychiatry and Beha-  
vioral Sciences

Division of Child and Adolescent  
Psychiatry  
Stanford University, School of Medicine  
Stanford, CA 94305

**Sunny Kim, Ph.D.**

UCSB Koegel Autism Center  
University of California, Santa Barbara  
Santa Barbara, CA 93106

**Brittany Lynn Koegel, Ph.D.**

CEO, Koegel Autism Consultants  
Goleta, CA 93111  
Research Coordinator  
Stanford University School of Medicine  
Stanford, CA 94305

**Kelsey Oliver, M.A.**

UCSB Koegel Autism Center  
University of California, Santa Barbara  
Santa Barbara, CA 93106

**Samantha K. Poyser, B.A.**

UCSB Koegel Autism Center  
University of California, Santa Barbara  
Santa Barbara, CA 93106

**Daina Tagavi, M.A.**

UCSB Koegel Autism Center  
University of California, Santa Barbara  
Santa Barbara, CA 93106

**Laurie A. Vismara, Ph.D., BCBA-D**

Early Emory Center for Child Develop-  
ment and Enrichment  
Emory University School of Medicine  
Atlanta, GA 30322

## For the Reader

If you're interested in learning more about PRT<sup>®</sup>, the authors and their team offer a range of resources, services, and training. Please see their web site, <http://www.koegelautism.com>, for more information or to schedule an event. Also note that PRT<sup>®</sup>, Pivotal Response Teaching<sup>®</sup>, Pivotal Response Training<sup>®</sup>, and Pivotal Response Treatment<sup>®</sup> are registered service marks with the U.S. Patent and Trademark Office, registered as marks of Koegel Autism Consultants, LLC, in association with educational conferences and workshops the authors provide in the field of non-aversive treatment interventions for children with autism and with the authors' learning center.

Other good resources for detailed information include the authors' first edition of this book, *Pivotal Response Treatments for Autism: Communication, Social, & Academic Development*, as well as *The PRT Pocket Guide: Pivotal Response Treatment for Autism Spectrum Disorders*, both published by Paul H. Brookes Publishing Co.

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# 1

## The History and Basic Components of Pivotal Response Treatment

Robert L. Koegel and Lynn Kern Koegel

### CHAPTER GOALS

- Goal 1.** The reader will learn about early applied behavior analysis (ABA) procedures and how they led to the development of Pivotal Response Treatment (PRT).
- Goal 2.** The reader will learn about specific motivational variables in PRT.
- Goal 3.** The reader will learn how PRT positively affects family interactions.
- Goal 4.** The reader will be able to discuss learned helplessness and how it relates to autism spectrum disorders (ASD).

This chapter describes how PRT emerged as an especially powerful yet child- and family-friendly approach for working with children with ASD. First, we trace PRT's roots in the principles and techniques of ABA used to treat children with ASD in the 1960s and 1970s. Next, we explore several core motivational variables within PRT—variables revisited throughout this book in discussions of how to implement interventions with children and young adults with ASD—and how PRT affects family interactions. Finally, to understand the role of motivation in PRT, it is crucial to understand how learned helplessness can impact the lives of people with ASD. We explore this topic at the end of the chapter.

### HISTORY: APPLIED BEHAVIOR ANALYSIS AND CHILDREN WITH ASD

PRT is a treatment that addresses core, or *pivotal*, areas of autism and related disorders. Addressing these areas early and systematically appears to result in large and rapid gains, thereby helping children with ASD make significant improvements in

behavior, communication, and social interactions. To understand PRT and the role of motivation within this approach, it is necessary first to discuss PRT's roots in ABA.

In the 1960s and 1970s, treatments based on principles of ABA began to emerge as viable and effective for improving the behaviors of children with ASD (Lovaas, 1977). Prior to that time, the parents were wrongly believed to be the cause of the disorder, and interventions largely separated the parents from their children (Bettelheim, 1967). During that period, almost all children with ASD were institutionalized by adolescence, many at much younger ages. There were few interventions available that effectively changed the children's behaviors, and, thus, challenging behaviors worsened over time.

Fortunately, ABA techniques used the field's established stimulus–response–consequence paradigm (Skinner, 1953), in which an instruction is given (stimulus), the individual responds (response), and a consequence is provided (either a reward or punisher). This paradigm was applied to behaviors of children with autism to teach new skills, decrease problem areas, and increase appropriate behaviors. Clinical trials using these procedures became known as discrete trials, wherein a clinician would present an instruction, or stimulus, such as “Touch your nose,” wait for a child's response, and then provide a consequence. For example, if the child touched his nose, the clinician might say “Good job,” and give the child a small treat. If the child responded incorrectly, the clinician might say “No!” and present a new trial. This stimulus–response–consequence teaching paradigm became known as discrete trial teaching, or DTT.

Throughout the 1960s and 1970s, ABA treatment studies primarily focused on developing interventions—which were heavily based on positive and negative consequences—to create behavior changes. Many relied on very salient reinforcement and punishment, as the children did not generally respond well to social consequences. For example, consequences such as electric shock, yelling “No,” and isolation were used to reduce dangerous behavior, severe tantrums, and self-injurious behavior (Risley, 1968). Treats, meals, and positive feedback were used to teach and reinforce positive behaviors (Wolf, Risley, & Mees, 1963). Shaping and chaining procedures were used to teach behaviors as well as communication (Wolf et al., 1963). Shaping procedures are those in which successively more correct responses are reinforced; chaining procedures are those in which a complex or multistep behavior or skill is broken down into discrete steps. These early procedures resulted in decreases in self-stimulation and echolalia and improved communication, play, and socialization (Lovaas, Koegel, Simmons, & Long, 1973). In the meantime, research was emerging showing that parents of children with autism were not the cause of the disorder (Koegel, Schreibman, O'Neill, & Burke, 1983). The results of ABA treatment studies were inconsistent with the parental causation theory, because generalization and maintenance of gains was only evidenced in the children whose parents received training in the ABA procedures (Lovaas et al., 1973; Koegel, Glahn, & Nieminen, 1978).

While these ABA procedures resulted in significant improvements in the children, the intervention was tedious and required many trials to teach each behavior. For example, Lovaas (1977), who developed the early shaping procedures for teaching speech to children who were nonverbal, reported that it might take as many as 90,000 trials to teach a single word. Further, children did not appear to enjoy the intervention, despite the fact that they were improving. Often the

children tried to avoid or escape the intervention sessions, and much of a therapist's time was devoted to procedures designed to decrease challenging behaviors. These limitations of ABA drew the authors' attention to the potential role of motivation in ABA-based interventions and DTT.

## **THE ROLE OF MOTIVATION IN LEARNING**

As researchers involved in those early ABA treatment studies, we were cognizant of the idea that learning is more likely to occur when a child is motivated. We began to explore whether the concept of motivation could be behaviorally measured and whether procedures to improve a child with autism's motivation could be developed. We were also concerned that the children did not appear to be happy when engaged in the intervention. Thus, our goal was twofold:

1. To improve the intervention so that children would not want to exhibit disruptive avoidance and escape behaviors
2. To be able to measure improved affect as a behavioral representation of improved motivation

In regard to motivated learning, we have measured responsiveness, latency of responding, and rate of correct responding, as well as behaviors that are incompatible with active learning, such as disruptive and off-task behaviors. In regard to affect, we have measured variables such as interest, happiness, enthusiasm, and engagement, using Likert scales. Thus far, in many single subject design studies and in randomized clinical trials (Mohammadzaheri, Koegel, Rezaei, & Bakhshi, 2015; Mohammadzaheri, Koegel, Rezaee, & Rafiee, 2014), our clinics and others have found that PRT results in greater gains and the children exhibit higher levels of positive affect and lower levels of disruptive behavior when the motivational components are incorporated into the intervention. Thus, the PRT motivational components appear to be an important iteration of the ABA interventions.

## **LEARNED HELPLESSNESS, MOTIVATION, AND CHILDREN WITH ASD**

Before we discuss the motivational components of PRT, let's discuss theory so you can understand how a *lack* of motivation may have developed in children with autism. Since the 1970s, researchers have examined the effects of repeated exposure to events that cannot be controlled or avoided (Maier & Seligman, 1976; Schwartz, 1981). This research led to the theory of learned helplessness. These environmental circumstances teach individuals that they are helpless because they are unable to escape a negative situation. The theory of learned helplessness is that exposure to events that are uncontrollable leads individuals to believe that their behaviors and the outcomes of these behaviors are independent, which produces an effect on the individual's motivation, cognition, and emotion (Maier & Seligman, 1976). For example, studies have found that when participants are repeatedly exposed to uncontrollable events (e.g., shocks, noise), they often exhibit a subsequent disruption in attempts to escape the aversive events (Abramson, Seligman, &



Teasdale, 1978). This generally involves lethargy and a lack of trying. More concerning is that learned helplessness can lead to depression, and individuals with depression perform even worse than nondepressed groups in learned helplessness situations. For example, if students are given unsolvable problems, they perform worse on later tasks; if they also show depressive symptoms, they will perform even more poorly (Klein, Fencil-Morse, & Seligman, 1976).

An additional factor in learned helplessness is attribution—the source to which the individual attributes the difficulty. Individuals who attribute the difficulty to causes within themselves (internal attribution), such as feeling that they are not intelligent enough to get a good grade on a test or to solve a problem, exhibit greater symptoms of learned helplessness than those who attribute the difficulty to outside factors (external attribution), such as the test or problem being too hard (Alloy & Seligman, 1979). Furthermore, learned helplessness can be influenced by whether an individual attributes difficulties or lack of control over the environment to global, all-pervasive factors or more limited factors (e.g., “I am unintelligent” versus “I have trouble with math”), and to stable, unchanging factors or temporary ones (e.g., “I am clumsy and uncoordinated” versus “I never learned how to do this dance step”).

Now, ponder how this theory may pertain to ASD as you read the case history of Thomas.

## **CASE HISTORY**

### **Learned Helplessness in Thomas, Age 4**

Consider Thomas, a 4-year-old child with ASD, who is having difficulties in many areas. His communication is significantly delayed, although he has learned to use about 30 words, primarily words naming his favorite items, which he requests. He has restricted and repetitive behaviors that interfere with daily living activities, and he shows little interest in others. Major tantrums or “meltdowns” occur regularly, especially when he has to transition away from the television or iPad. Life is a challenge for the family. Preschool starts at 8:00, and Thomas’s parents need to be at work shortly after. To avoid meltdowns, Thomas’s family dresses him in the morning so he won’t be late to school and they’ll be on time for work. Sometimes he engages in meltdowns, so they carry him to the car with his iPad to avoid delays while he tantrums. Because he has difficulty communicating, his parents—who usually know what he wants—let others know what he wants. Overall, Thomas engages in little social-verbal communication and engages in very few self-help skills throughout the day. Consequently, he is very lethargic and just waits for others to dress him and help with daily living skills. He is able to communicate verbally but does so infrequently because he usually gets what he wants if he becomes disruptive or just waits. ■■■

Thomas is exhibiting what appears to be learned helplessness. Compare the impact of learned helplessness on Thomas’s daily life to its impact on the daily life of Sarah.

## **CASE HISTORY**

### **Learned Helplessness in Sarah, Age 13**

Sarah is a middle schooler who has a diagnosis of Asperger syndrome. Her parents both hold graduate degrees. She has no siblings and is bright but performs poorly in school because of inattentiveness during class. She often does not turn in homework and engages in elaborate avoidance behavior when her parents try to help her with homework, such as telling jokes, making faces, joking about the homework, guessing at answers until her parents tell her she is correct, lying down, asking for water, and so on. Her parents are wonderful and caring people and bend over backwards to respond to her every need. In fact, they even help her get dressed and undressed, serve her dinner on a tray while she watches TV, and sit with her every evening to help her with homework. They are exhausted but feel like there is no other way. Sarah has reached a point where she does little for herself and expects to be waited on. Sometimes she even snaps her fingers with a demand for her parents. |||

Developing learned helplessness can be complex, depending on the extent to which uncontrollable environmental conditions occur and can be exacerbated by other issues. However, if the individual attributes his or her failure to control the environmental conditions to a global attribute, such as being a poor communicator or not being smart enough, this may cause an individual to feel helpless. Because well-meaning adults often “help” individuals with ASD, they can create learned helplessness. The negative effects of the lack of contingent consequences can worsen over time if the situation continues and is present across environments (stable attribution). The antidote to learned helplessness is to create situations in which individuals with ASD experience success on their own and can link their behaviors to the consequences. To do this, we must motivate individuals with learned helplessness to respond.

## **MOTIVATIONAL COMPONENTS OF PRT**

In order to improve motivation during teaching sessions, several specific, evidence-based procedures have been developed: giving individuals a choice of materials used, interspersing previously learned tasks with new tasks, varying tasks, using natural rewards, and rewarding attempts at the task.

### **Provide Choice**

Simply stated, if an individual has some choice over the instructional materials used during the teaching sessions, he will perform better. Many studies have found that choice is important in improving performance in many areas, including (but not limited to) learning first words (Koegel & Koegel, 1995), acquisition of language structures (Carter, 2001), engagement with toys (Reinhartsen, Garfinkle, & Wolery, 2002), and articulation and speech intelligibility (Koegel, Camarata, Koegel, Ben-Tall, & Smith, 1998). Child choice is also helpful in reducing challenging

behaviors, such as repetitive behaviors (Morrison & Rosales-Ruiz, 1997) and disruption (Moes, 1998). For example, all too often teachers and therapists predetermine their teaching materials without considering the interests of the child. Or, if parents find a cool toy, they may try and redirect the child to it, regardless of whether the child shows interest in that toy or is actively engaged with another toy. Choice can be determined by watching what the child plays with, asking the child what she'd like to play with, and/or being vigilant when a child approaches an activity.

It is important to remember that preference is different than choice. You may have a plethora of toys the child prefers, but because choice can vary from day to day and even minute to minute, you'll need to provide constant choices among the preferred items (Carter, 2001). There are times when choice may not seem possible. For example, if a child is fully included and the teacher gives a homework assignment, such as a printed math sheet, it has to get done. In this situation, however, the child can still choose where he wants to sit to complete the homework, what type of writing utensil he wants to use, what problems he wants to do first, what color paper he'd like to use, and so on (Moes, 1998). Choice can also be provided for social activities for adolescents and adults (Koegel, Ashbaugh, Koegel, Detar, & Regester, 2013) and can improve social conversation (Koegel, Dyer, & Bell, 1987).

Choice is important. Follow the child's lead. Be attentive and observant. Teach adolescents and adults with ASD how to self-direct a conversation that may appropriately include their interests and develop social activities around their favorite themes. It will make a difference in regard to engagement, learning, appropriate behavior, and enjoyment.

## **Intersperse Tasks**

No one likes to be drilled, drilled, drilled, especially on hard stuff. In the past, we developed goals and then worked repetitively and repeatedly on those goals. But research shows that interspersing previously mastered, or maintenance, tasks with the target, or acquisition, tasks results in faster learning, decreased disruptive behavior, and improved affect (Dunlap, 1984). It might seem counterintuitive. One might expect learning to be slower when using maintenance tasks as there are potentially fewer trials in which to teach the acquisition task. However, the opposite is true. When most of students' academic tasks are easy, the students show greater progress on the rest of the tasks that are challenging and the children exhibit lower levels of disruptive behavior. It may be that this situation creates behavioral momentum or simply that we all perform better when we are having some success.

## **Vary Tasks**

Doing the same task over and over again can be frustrating, monotonous, and boring. Oftentimes as special educators, we feel that we have to focus on getting the most done in the least amount of time, and therefore we focus on the same task over and over again. However, better outcomes result when the task is varied. That is, when a target task is presented less frequently, the children exhibit better behavior and learn faster. For example, the clinician may choose five activities to work on and present each new task no more than two times in a row, rather than working repetitively on a single target behavior (Winterling, Dunlap, & O'Neill, 1987).

Again, while one might expect this procedure to result in slower learning, it actually accelerates the acquisition of learning. So, as a whole, when interspersal and task variation are included in the teaching sessions, individuals with ASD are observed to be more interested, enthusiastic, and happier. As well, they acquire the target behavior faster and demonstrate lower levels of repetitive and disruptive behaviors.

## **Use Natural Rewards**

Not long ago, many of the research studies in this field focused on how to administer rewards. For example, studies conducted at the authors' autism center showed that mixing up the rewards was more effective than keeping the reward constant (Egel, 1980, 1981). During the time when these studies were conducted, we used flash cards to teach the children and rewarded them with food treats. Rather than giving the children a piece of candy each time they responded correctly, we found that changing it up and alternately giving them a chip, drink, or piece of candy instead of giving them the same reward every time improved responding. Later, we found that tying the reward more directly to the child's response resulted in even greater improved learning (Williams, Koegel, & Egel, 1981). For example, if we are teaching a child to open a lunch box, placing the candy inside of the lunch box not only provides a reward that is temporally closer to the behavior, but also allows the child to be rewarded directly for his or her actions. The reward follows naturally from the child's actions.

You can apply these types of natural rewards to just about any behavior. For example, with self-help skills, if the child is working on learning how to get dressed, having him put on a jacket in a chilly room will result in a natural reward. Similarly, setting the table with the end reward of getting to eat dinner would be an example of a natural reward. In the area of communication, having a child produce a word for a desirable item to gain access to that item would be a natural reward. Natural rewards can even be used with teaching academic skills. For example, when teaching literacy skills, having a child write or read clues to a scavenger hunt or write a letter to a favorite relative has natural rewards and is more meaningful and fun than drill-type instruction. Because we provide natural rewards, we don't need to worry about what special items or activities we will use as rewards and how we will implement the administration of the reward. By paying attention to child choice, then providing that favorite item or activity in a natural way, we have a much more enthusiastic and active learner.

## **Reward Attempts**

Finally, rewarding all true attempts is important for improving motivation. Early on in the history of interventions for ASD, researchers and clinicians believed children with autism needed very clear and unambiguous feedback. Intervention was implemented within the context of a strict shaping paradigm. Therefore, if a child's attempt was not as good as, or better than, the previous response, a reward was not provided. Worse, we often told the child "No" when the response wasn't good enough, even when the child was trying. Most of that early work focused on teaching first words to the children, and at that time, very few learned how to talk. In fact, even with the best interventions, only about half learned to use expressive verbal communication (Prizant, 1983). Then, we found that if we rewarded

the children for any clear attempt, even if their pronunciation wasn't perfect or a response wasn't as good as the previous one, they acquired verbal communication faster (Koegel, O'Dell, & Dunlap, 1988). This research demonstrated the importance of making sure each and every attempt is rewarded along with the correct responses. So, in our own practice, you won't hear any of our clinicians say "Wrong!" or "No!" when the child is engaged and trying. Even if the response isn't correct, if the child makes an effort, we'll say "Good try" or "Great try!"

However, we have one important warning: Don't confuse attempts with correct responding. If a child is engaging in off-task or disruptive behaviors and responds correctly, but isn't trying, he should not be rewarded. Because our target goal is focusing on motivation, we need to make sure that all rewards are given for attempts or correct responses only when the individual with ASD is truly making an effort and trying.

## THE OVERALL MOTIVATIONAL PACKAGE

Now that we have described the five motivational components of PRT, let's talk a bit about putting them altogether. When implemented together, the components become especially powerful.

### Combining the Motivational Components to Teach Expressive Communication Skills

In a first study of motivational components, we targeted expressive communication with older preschool and kindergarten children with autism to whom it had been especially difficult to teach expressive communication (Koegel, O'Dell, & Koegel, 1987). During the baseline, we used a traditional ABA approach that did not include the motivational variables. During this type of teaching, the children remained relatively nonverbal. That is, they may have imitated a word or word approximation on occasion but very rarely, even over a period of many months. However, once the motivational components were incorporated into the teaching paradigm, the children began to show improvements in their imitative utterances and their deferred imitation, meaning they would use the words even when they did not have a verbal model prompt. We also examined spontaneous utterances in this study. When the motivational components were incorporated into the intervention, the children began to emit a large number of spontaneous utterances outside of the clinical setting, with a huge variety in the words they were using. This study focused on communication was the first systematic implementation using all of the motivational variables combined as a package.

At that time, in the 1980s, it was unheard of to implement behavioral intervention in a nonstructured manner. Then, effective interventions were implemented in a very clinical, drill-type format in a room free from distractions. We typically used flash cards for teaching first words. With children who were nonverbal, we would often start by getting their eye contact (e.g., "Look at me!"), sometimes working on eye contact alone for a period of time. For children who were completely nonverbal, we generally started with sounds in isolation first—for example, prompting them, "Say *mmmm*," then rewarding the imitation. Eventually we added a second sound, for example, "Say *ah*." Once they were able to imitate and discriminate between the two sounds we added them together, using prompts such as "Say *ma*"

and eventually “Say *mama*.” Of course, many of the words we were teaching these children did not name their desired items, and when we got past the eye contact and imitation phases, we started with the flash cards. So, it wasn’t much fun, and it was pretty common for the kids to exhibit lots of avoidance and escape-motivated disruptive behavior. Yet, they did learn. It was slow — painfully slow — but the kids did progress. Unfortunately, it was difficult to find people in the field who were willing to work with the children. Most professionals felt that the amount of effort the intervention took, coupled with the small gains, made the intervention undesirable. However, that was before the epidemic in autism diagnoses, and before we had developed the specific motivational procedures.

So, let’s go back to the 1987 study where we focused on communication using motivational components. It was amazing. Children who had never talked before started rapidly learning words. Some learned quickly and some learned more slowly, but most learned to talk. Up until that time, it was not unusual for 50% of children with autism to remain nonverbal for their whole lives (Prizant, 1983), so this was a huge improvement. Read on for just one example of the gains children in this study made.

## CASE HISTORY

### Charlie and His First Word

I (Lynn) remember one day when I was working with little 5-year-old Charlie. He had never said a word in his life. We had drilled him with flash cards for a year, with little success. Then, focusing on the motivational procedures, I brought his favorite cookie to the session—chocolate chip. Instead of the flash cards, I held up the cookie and modeled the word “cookie.” In a very labored but effortful way, he slowly, but surely, said “coo - kie”—a little slow, but perfectly pronounced. It was his first word. And, of course, I immediately broke off a piece of the cookie and gave it to him as a natural reward. We did this over and over, and he had no trouble coming up with the word “cookie.” The next day, I brought another one of his favorite foods, an apple. Again, he slowly but surely said the word “apple.” We were on our way! Some kids will use the same word or same sounds until they have learned about 10 words and get the idea that each item has its own label. Not Charlie. He started coming out with word after word after word. And again, it wasn’t that we hadn’t tried to teach him to talk. It was just that we hadn’t done it the right way. He wasn’t able to make that connection between using a word and having that communicative behavior lead to a positive consequence. What a difference the motivational components made for him. ■■■

What’s also interesting are the statistics for children older versus younger than 5. The number of children who are nonverbal and begin talking after the age of 5 is low, even with the motivational components. If we begin intervention before the age of 3, approximately 95% will learn to use verbal communication; for children who begin receiving intervention between ages 3 and 5, it’s slightly lower, about 85%–95%; but after age 5, if the children are completely nonverbal (meaning they have not even made any word attempts), only about 20% will learn to use expressive verbal communication (Koegel, 2000). Thus, early intervention is extremely important. But keep two things in mind: 1) a small percentage of children do not

learn to talk even when intervention is provided before the age of 5; and 2) some children learn to talk even after the age of 5.

## **The Natural Language Paradigm and the Development of PRT**

Because the motivational intervention for teaching communication looked so natural and similar to the way in which typical language learners acquire communication, we called it “The Natural Language Paradigm” or “NLP.” Soon after, we learned that the motivational components could be applied to a wide variety of other behaviors, so we re-named the procedures “PRT” or “Pivotal Response Treatment.” (PRT can also stand for “Pivotal Response Teaching” or “Pivotal Response Training”; these three terms can be used interchangeably.) We use the word *pivotal* for an important reason. When the motivational components are incorporated, we see wide positive improvements in a number of other untreated behaviors. For individuals with ASD, who have a number of behavioral and social concerns that need to be addressed, this is particularly important, especially if we want to get them on a more typical developmental trajectory.

Now, back to our research. Incorporating the motivational components seemed to make such a difference for the children’s expressive communication that we decided to document how they affected other behavior. In a subsequent study, we worked with preschool children between 3 and 4 years of age (Koegel, Koegel, & Surratt, 1992). We targeted first words for nonverbal children or language for the verbal children. We used a repeated reversals design, alternating the treatments between a standard ABA communication therapy, without the motivational components incorporated, and the PRT intervention. We assessed the preschoolers’ disruptive behaviors that interfered with the teaching of communication skills, including turning away from the teacher, screaming, crying, yelling, loud repetitive behaviors that masked the teacher’s instructions, slapping, grabbing, knocking the materials off the table, climbing under the table or chair, lying down on the floor, and so on. We found that when we implemented the ABA sessions without the motivational components, the incidence of these behaviors was very high. In contrast, every time we incorporated the motivational components, these behaviors were low. One detail that did not appear in the publication, but that we remember so clearly, was the teachers’ behavior. Because the teachers were naïve to the experimental hypothesis, we just told them what to do during each session. After we had completed several sessions, the teachers began to moan and groan every time we told them to use the standard ABA procedures. Without even being aware of the experimental design, they were visibly bothered when they had to teach without the motivational components.

## **PRT and Parental Stress During Family Interactions**

The response of these teachers wasn’t unique. In a later study, we examined parental stress during family interactions (Koegel, Bimbela, & Schreibman, 1996). In one trial, we taught the parents of children who were between 3 and 9 years old how to implement ABA intervention without the motivational components; we taught another group to incorporate motivational components. Videotapes of their home interactions were scored for happiness, interest, stress, and communication style. The results of this study showed participants scoring at similar levels in all areas prior to intervention. Following the ABA intervention without the motivational

components, all of the parents remained similar in all areas during family interactions. In contrast, when the PRT intervention was taught, the parents' happiness, interest, and communication styles improved and their stress decreased. In fact, all of the parents went from neutral to positive family interactions following the PRT parent education. This finding is especially important as parents of children with ASD often exhibit very high levels of persistent stress. This underscores the importance of interventions that have a positive effect on the child while also reducing parent stress. Children with ASD need to be provided with a constant therapeutic environment throughout their waking hours. For most parents, providing this environment can be a very difficult experience or a neutral experience at best. However, including the motivational components in the intervention can make this a pleasant experience. These collateral gains are critically important for family systems.

### **Applying PRT to Other Target Behaviors: Academic and Social Skills**

Following this initial work in the area of communication, we focused on applying PRT to other target behaviors. For example, we found that the motivational components can easily be incorporated into academic activities (Koegel, Singh, & Koegel, 2010). These techniques are discussed in detail in Chapter 9.

We also found that motivational components can be incorporated into social activities (Baker, Koegel, & Koegel, 1998). In this study, we selected elementary school children with ASD who tended to spend all or most of their lunch and recess periods in social isolation. We interviewed each child's teacher and parents to understand if they had any restricted interests—interests that we might use to provide the motivational variable of choice. Then, we developed a social game to be played with a group of typical children with the theme of the game based on the restricted interest. Once the restricted interest was incorporated, the children with ASD actively engaged in the social activity. What's more, the children's social interactions with typical peers also increased during other times of the day. Read on for an example.

## **CASE HISTORY**

### **David and His States**

David was a second grader who spent his entire recess and lunch periods perched on the top of the slide watching the cars pass by. He never uttered a word to a peer, nor did he express any interest in participating in any other activities, even when suggested. However, he was deeply interested in the United States. He had learned every state and its geographic location on a map; every state capital, state flag, flower, and animal; and the governor of each state (including family information). His interest had begun to develop in kindergarten when he could rapidly put together puzzles of the U.S., even when the puzzle pieces were flipped over with only the shape of each state as a cue. Fortuitously, his elementary school had a map of the U.S. painted on the playground. To take advantage of his restricted interest, we developed a "States Game" wherein one person called out the name of a state and a mode of movement (e.g., hop, skip, run, walk). When the caller said, "Run to Florida," all the children scurried along to the state. The last student to arrive on the state was the caller for the next round.



Most second graders don't know where 90% of the states are located, so David proved to be the valued player of the game. The children looked toward him when they didn't know the location of a state. David enthusiastically played the game and also engaged in peer interactions more frequently throughout the day. In a questionnaire given to his classmates, they made comments such as "We didn't know David was so smart" and "David is really fun to play with." |||

From a practical point of view, we know that restricted interests are very challenging, as individuals with ASD are often extremely driven to engage in the restricted interest and often engage in challenging behaviors if redirected away from that interest. However, by designing social activities based on restricted interests, which are often at the pinnacle of these individuals' reinforcer hierarchies, adults can help to make socialization pleasant and enjoyable for children with ASD. Further, because of their accumulation of detail and vast knowledge of the topic, these children are often viewed as the most valued members of their peer cliques.

Other research labs have shown that PRT can be used to improve additional areas of social behavior. For example, typically developing peers can be taught to use PRT strategies during play, which results in improved engagement, more initiated play, longer play interactions, and more social conversation between the children with ASD and the typical peers (Pierce & Schreibman, 1995). Similarly, PRT procedures were used to improve the symbolic play complexity of children between the ages of 4 and 9 (Stahmer, 1995). In addition, the children's creative symbolic play and interaction skills also improved with the improvement of symbolic play, which was targeted through PRT.

As a whole, the positive improvements of the PRT motivational components have been shown with first words, language, play, socialization, self-help, and academics. One important consideration of PRT is its use as an antecedent positive behavioral support strategy. That is, when the intervention is implemented in a motivational way, this can be conceptualized as an antecedent intervention to create an environment where behavior problems are reduced or eliminated. Using such strategies reduces the need for reactive behavior intervention plans.

The motivational components of PRT were the first pivotal area we researched. Following this research, we discovered additional areas, including child initiations, self-management, responsiveness to multiple cues, and empathy, that also appear to have a widespread positive effect on other untreated areas. These are discussed in subsequent chapters.

### **Key Insights** ||| Components of PRT

Motivation is crucial within PRT and involves the following variables:

- **Child choice:** Carefully observing the child to assess his or her interests and using preferred items and activities as stimulus materials in the sessions is critical.
- **Interspersal:** Incorporating previously learned (maintenance) activities with newly targeted (acquisition) tasks improves motivation.

- **Task variation:** Varying the activities, instead of drilling the child on target behaviors, results in faster learning.
- **Natural rewards:** When the consequences of a behavior are inherently linked to the behavior itself, a faster learning curve is achieved.
- **Rewarding attempts:** When all clear attempts are rewarded, regardless of whether they are perfect responses, individuals with ASD learn faster.

Motivation is central to the following strategies for working with students with ASD:

- **Reduce disruptive behavior:** When motivational components are incorporated into the intervention, disruptive behaviors decrease or vanish.
- **Use antecedent interventions:** Incorporating motivational components into the intervention reduces escape and avoidance behaviors and thereby functions as an antecedent intervention, which is a positive behavior support strategy.
- **Use perseverative interests:** Selecting an individual with ASD's perseverative interest and using that as the theme of a club or activity improves socialization during the activity and during other times of the day.
- **Create valued member environments:** When the strengths of an individual with ASD are chosen for the social context of an activity, the individual with ASD is often considered the valued member of the peer clique.

## SUMMARY

PRT emerged from the principles and techniques of ABA used to treat children with ASD in the 1960s and 1970s. PRT built upon seminal behavioral research that relied upon the stimulus-response-consequence paradigm; at that time, DTT was the method used to help individuals with ASD learn targeted behaviors. Early PRT research considered the role of motivation in learning and the negative effects of learned helplessness upon learning and affect. Multiple early studies ultimately identified five critical motivational variables: choice, interspersal, task variation, use of natural rewards, and the importance of rewarding attempts to perform a target behavior. These variables, central to PRT interventions, can help practitioners working with children with ASD to reduce disruptive behavior, use antecedent interventions, work in a positive way with restricted interests, and create environments in which individuals with ASD are valued members.

## STUDY QUESTIONS

1. What are the behavioral measures of a "motivated" individual?
2. List five treatment variables that have been empirically shown to improve motivation.
3. What are the collateral benefits of incorporating motivational aspects into the intervention?

4. Describe the effect of motivational variables on the stress of parents.
5. Discuss the changes that occur during family interactions when motivational components are incorporated into the intervention.
6. Provide an example of how a natural reinforcer can be incorporated into intervention for communication, self-help, and language intervention.
7. List some specific methods of creating an environment wherein the individual with ASD may be considered the valued member of the peer group.
8. List at least five skill areas that have been shown to result in improved performance when motivational procedures are incorporated.
9. Provide an example of how to teach first words using motivational procedures.
10. Discuss variables that may make perseverative interests difficult to treat.
11. Describe the theory of learned helplessness and how learned helplessness may be created in a child with ASD.

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