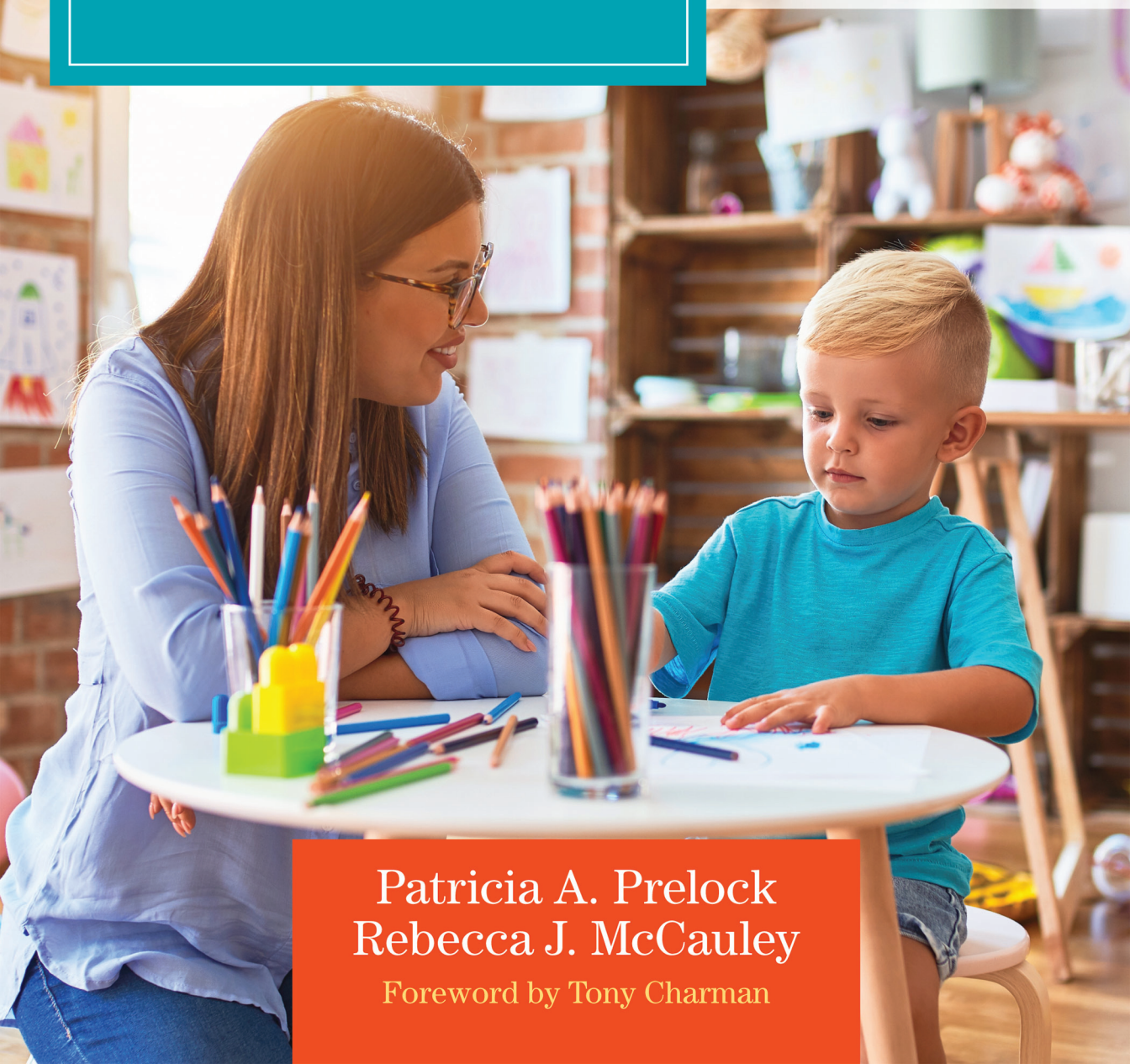
Treatment of Autism Spectrum Disorder

Evidence-Based Intervention Strategies for Communication & Social Interactions

SECOND EDITION



Patricia A. Prelock
Rebecca J. McCauley

Foreword by Tony Charman

Communication and Language Intervention Series

Treatment of Autism Spectrum Disorder

Evidence-Based Intervention Strategies for Communication & Social Interactions

Second Edition

edited by

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The individuals described in this book are composites or real people whose situations are masked and are based on the authors' experiences. In all instances, names and identifying details have been changed to protect confidentiality.

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In 2019, she was named associate editor for the *Journal of Autism and Developmental Disorders.* Dr. Prelock received the University of Vermont's Kroepsch-Maurice Excellence in Teaching Award in 2000 and was named an ASHA Fellow in 2000 and a University of Vermont Scholar in 2003. In 2011, she was named the Cecil & Ida Green Honors Professor Visiting Scholar at Texas Christian University, and in 2015 Dr. Prelock was named a Distinguished Alumna of the University of Pittsburgh. In 2016, she received the ASHA Honors of the association, and in 2017, she was named a Distinguished Alumna of Cardinal Mooney High School. Dr. Prelock also received the 2018 Jackie M. Gribbons Leadership Award from Vermont Women in Higher Education. Dr. Prelock is a board-certified specialist in child language and was named a fellow in the National Academies of Practice (NAP) in speech-language pathology in 2018. She was the 2013 president for the American Speech-Language Hearing Association.

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Tom Buggey began research on self-modeling at Penn State in 1992, working with preschoolers with language delays. Following the urgings of two gifted graduate assistants, together they conducted their first research with children on the autism spectrum in 1995 with very positive results. Thereafter, children with autism became the focus of his research. Dr. Buggey was recruited to serve as the Siskin Chair of Excellence in the Special Education Department at UTC in 2007. The next 7 years were devoted to research on developing language and social skills with preschool-age children with autism. In his career as a researcher, he has conducted more than a dozen studies on the use of self-modeling, all which have appeared in major journals; published several book chapters of self-modeling and other aspects of early intervention; and published the only book on self-modeling, *Seeing is*

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V. Mark Durand is known worldwide as an authority in the area of ASD. He is professor of psychology at the University of South Florida–St. Petersburg, where he was the founding dean of Arts and Sciences and vice chancellor for Academic Affairs. He has authored more than 145 publications and more than a dozen books, including *Optimistic Parenting: Hope and Help for You and Your Challenging Child* and, most recently, *Autism Spectrum Disorder: A Clinical Guide for General Practitioners.*

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Dr. Kasari received her doctorate from the University of North Carolina at Chapel Hill and was a National Institute of Mental Health postdoctoral fellow at the Neuropsychiatric Institute at UCLA. Since 1990, she has been on the faculty at UCLA, where she teaches both graduate and undergraduate courses and has been the primary advisor to more than 60 doctoral students. She is a founding member of the Center for Autism Research and Treatment at UCLA. Her research aims to development novel, evidence-tested interventions implemented in community settings. Recent projects include targeted treatments for early social-communication development in at-risk infants, toddlers, and preschoolers with autism and peer relationships for school-age children with autism. She leads several large multisite studies, including a network on interventions for minimally verbal school-age children with ASD, and a network that aims to decrease disparities in interventions for children with ASD who are underrepresented in research trials. She is on the science advisory board of the Autism Speaks Foundation and regularly presents to both academic and practitioner audiences locally, nationally, and internationally.

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Dr. Lynn Kern Koegel and her husband developed Pivotal Response Treatment®, an intervention used worldwide for the treatment of ASD. She has published well over 100 articles and chapters, field manuals, and eight books, including *Overcoming Autism* and *Growing Up on the Spectrum* with parent Claire LaZebnik, published by Viking/Penguin and available in most bookstores. The Koegels have received 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 ABA award for enduring programmatic contributions in behavior analysis. Dr. Lynn Koegel has appeared on numerous television and radio shows discussing autism, including the Discovery Channel, and ABC's hit show *Supernanny*, working with a child with autism. The Koegels' work has also been showcased on ABC, CBS, NBC, and PBS, and they are the recipients of many state, federal, and private foundation gifts and grants for developing interventions and helping families with ASD.

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Amy Laurent specializes in the education of autistic children. Her work involves creating learning environments designed to facilitate children's active engagement at home, in schools, and throughout their communities. She is a coauthor of The SCERTS Model and frequently lectures around the globe. She is passionate about neurodiversity and helping others to honor and understand the implications of "different ways of being" in relation to navigating the physical and social world.

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As a professional, Molly Quinn has been defined as a teacher, a behavior analyst, a parent-training consultant, and a researcher. She has worked with people between the ages of 2 years and 30 years who were diagnosed with a developmental disability, within their homes, schools, and communities, for the last 15 years. In her personal life, Molly is a mother of three and a foster mom to two children, living in Plainfield, Indiana. If given the opportunity for leisure, Molly enjoys reading and is passionate about traveling and interior decorating.

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Emily Rubin is the director of the Educational Outreach Program at the Marcus Autism Center in Atlanta, Georgia. She is a speech-language pathologist specializing in autism, Asperger syndrome, and social-emotional learning. She is a coauthor of The SCERTS Model, a criterion-referenced assessment tool and educational framework for social communication and emotional regulation. Her current work is focused on building the capacity of public-school systems to embed interpersonal and learning supports that benefit all students and young children.

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Kyle Sterrett's research interest lies in the optimization of evidence-based interventions through the understanding of their active ingredients using quantitative methods—for example, understanding of the role of speech-generating devices within efficacious interventions for language learners with autism. He has been involved as a clinician in a number of recent intervention trials, implementing interventions for children with autism and developmental delays within schools and in home settings through parent training in the JASPER intervention model.

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Dr. Wegner is a clinical professor and director of the Schiefelbusch Speech-Language-Hearing Clinic at the University of Kansas (KU). She directs the Pardee Augmentative and Alternative Communication Resource and Research Laboratory on the Lawrence campus of KU. Dr. Wegner directed numerous personnel preparation projects funded by the U.S. Department of Education, Office of Special Education Programs, including the Communication, Autism, and Technology Project and the Augmentative Communication in the Schools Project. She has authored numerous articles and book chapters on Augmentative and Alternative Communication. Dr. Wegner is a Fellow of the American Speech-Language-Hearing Association and served on the ASHA Ad Hoc Committee on Autism Spectrum Disorders that developed the ASHA policy documents for practice with people with ASD.

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Amy M. Wetherby is a Distinguished Research Professor in the Department of Clinical Sciences, director of the Autism Institute in the Florida State University College of Medicine, and the Laurel Schendel Professor of Communication Disorders in the Florida State University College of Communication and Information. She has 30 years of clinical experience and is a Fellow of the American Speech-Language-Hearing Association. Dr. Wetherby has published extensively and gives presentations regularly at national conventions on early detection of children with ASD and intervention for children with ASD using The SCERTS Model. She is the

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1

Introduction to Treatment of Autism Spectrum Disorder (ASD)

Patricia A. Prelock and Rebecca J. McCauley

INTRODUCTION

This book is intended to introduce readers who have some familiarity with autism spectrum disorder (ASD) and its core impairments to a group of interventions focused on social communication and social interaction. Because the diagnostic category for autism has undergone modification since the first edition of this text, this chapter describes these changes and briefly highlights some implications for these changes. The chapter then provides updates on national reviews of interventions considered to be established in support of the social communication and social interaction of children with ASD.

CHANGES TO THE DSM-5

When the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision* (DSM-IV-TR; American Psychiatric Association [APA], 2000) was updated to DSM-5 (APA, 2013), pervasive developmental disorder/autism, with its subthreshold diagnoses, changed to autism spectrum disorder. The diagnostic criteria also moved from three primary diagnostic categories to two: 1) social communication and social interaction and 2) restricted, repetitive, and stereotyped patterns of behavior. Expansion within each category also occurred. Table 1.1a summarizes differences between the earlier (DSM-IV-TR, APA, 2000) and the current characterization of ASD (DSM-5; APA, 2013). A particularly significant change is that language and cognition are now considered to be potential comorbid conditions and require a separate assessment to ensure deficits in these areas cannot be better explained by an intellectual disability (ID) or a global developmental delay.

Table 1.1a. A summary of changes associated with autism spectrum disorder (ASD) diagnoses based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-Text Revision* (DSM-IV-TR; American Psychiatric Association [APA], 2000) and *Fifth Edition* (DSM-5; APA, 2013)

	DSM-IV-TR	DSM-5
Possible diagnoses	Autism spectrum disorders with pervasive developmental disorder-not otherwise specified (PDD-NOS), autistic disorder, Asperger disorder, childhood disintegrative disorder	Autism spectrum disorder is the sole diagnosis and should be used for individuals with well-established diagnoses of autistic disorder, Asperger disorder, or PDD-NOS by using the DSM-IV-TR criteria.
Diagnostic criteria for ASD	Clinically significant, persistent deficits in social communication and interactions (must meet two of the social and one of the communication criteria) Restricted repetitive patterns of behavior, interests, and activities (must meet one of the behavior criteria) Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities).	Deficits in social communication/interaction (must meet all three of the social criteria) Restricted and repetitive interests (must meet two of the four behavior criteria)
Onset	Must have been seen before age 8	Symptoms must have been present since early development, even if only recognized later.
Possible co-occurring diagnoses	—	Attention-deficit/hyperactivity disorder; speech sound disorder, language disorder, childhood-onset fluency disorder; NOT social (pragmatic) communication disorder
Possible specifications	—	With or without accompanying intellectual impairment With or without accompanying language impairment Associated with a known medical or genetic condition or environmental factor
Severity level description	Severity level description was not specified.	Severity level described in three levels. See Table 1.1b for a description of each level.

Source: American Psychiatric Association [APA], 2000 and 2013.

Table 1.1b describes the severity levels now associated with each of the two primary diagnostic categories (DSM-5; APA, 2013).

Several implications are discussed in the literature regarding the application of the new DSM-5 criteria. For example, Young and Rodi (2014) found only 57.1% of those with pervasive developmental disorders (PDDs) on the DSM-IV met the criteria for DSM-5, whereas 50%–75% maintained diagnoses in a review completed by Smith and colleagues (2015). In both studies, children with a diagnosis of PDD-not otherwise specified (PDD-NOS) and Asperger's disorder were less likely to meet the DSM-5 criteria, specifically all three social communication and social interaction criteria. However, a case was made to ensure students who may not qualify under

Table 1.1b. Severity levels associated with the two diagnostic criteria for autism spectrum disorder in the DSM-5

Severity level	Social communication	Restricted, repetitive behaviors
Level 3: Requiring very substantial support	Severe deficits in verbal and nonverbal social communication skills cause severe impairments in functioning, very limited initiation of social interactions, and minimal response to social overtures from others (e.g., a person with few words of intelligible speech who rarely initiates interaction and, when he or she does, makes unusual approaches to meet needs only and responds to only very direct social approaches)	Inflexibility of behavior, extreme difficulty coping with change, or other restricted/ repetitive behaviors markedly interfere with functioning in all spheres Great distress/difficulty changing focus or action
Level 2: Requiring substantial support	Marked deficits in verbal and nonverbal social communication skills Social impairments apparent even with supports in place Limited initiation of social interactions; and reduced or abnormal responses to social overtures from others (e.g., a person who speaks simple sentences, whose interaction is limited to narrow special interests, and has markedly odd nonverbal communication	Inflexibility of behavior, difficulty coping with change, or other restricted/repetitive behaviors appear frequently enough to be obvious to the casual observer and interfere with functioning in a variety of contexts Distress and/or difficulty changing focus or action
Level 1: Requiring support	Without supports in place, deficits in social communication cause noticeable impairments Difficulty initiating social interactions, and clear examples of atypical or unsuccessful response to social overtures of others May appear to have decreased interest in social interactions (e.g., a person who is able to speak in full sentences and engages in communication but whose to-and-fro conversation with others fails and whose attempts to make friends are odd and typically unsuccessful)	Inflexibility of behavior causes significant interference with functioning in one or more contexts Difficulty switching between activities Problems of organization and planning hamper independence

the new criteria continue to receive the intervention services they require (Smith et al., 2015; Young & Rodi, 2014).

A study with 185 children under 5 years old indicated that children with autism on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; APA, 2000) were also diagnosed with ASD on the DSM-5, but children with previous PDD-NOS diagnoses had fewer comorbid and emotional behaviors and insufficient symptoms in the restricted repetitive patterns of behavior category to qualify for an ASD diagnosis (Christiansz et al., 2016). Another study (Zander & Bolte, 2015) of younger children between 20 and 47 months found that 12%–67% of the children who met the DSM-IV-TR criteria did not meet the DSM-5 criteria, although diagnosis was influenced by severity level, leading to less

consistent diagnosis. Reports by the Centers for Disease Control and Prevention (Baio et al., 2018), however, indicate the number of children meeting the DSM-5 criteria for ASD as compared to the DSM-IV-TR criteria are fairly similar, with DSM-IV-TR cases exceeding DSM-5 cases by less than 5% and with an 86% overlap between the two definitions. It remains unclear what the impact has been or will be to the prevalence of ASD diagnoses with the addition of social communication disorder (APA, 2013). Although this disorder is characterized by challenges in the social use of both verbal and nonverbal communication similar to ASD, there is no evidence of restricted and repetitive patterns of behaviors, interests, or activities. Whatever the ultimate impact is of the application of the DSM-5 on the diagnosis of ASD, children still require evidence-based interventions that address their social communication and social interaction impairments, as prevalence numbers continue to rise with 1 in 59 children receiving a diagnosis (Baio et al., 2018).

BACKGROUND ON INTERVENTION STRATEGIES FOR COMMUNICATION AND SOCIAL INTERACTION

Since 2000, thinking has evolved about which intervention approaches are most appropriate for supporting the social interaction and communication needs of children with ASD as well as children with social pragmatic disorders who may not meet the ASD diagnosis. Although **traditional behavioral interventions** are plentiful in the literature (e.g., Cooper et al., 2007) and tremendously influential in a variety of settings (Downs et al., 2007; Lafasakis & Sturmey, 2007; Taubman et al., 2001), **social-pragmatic developmental interventions** continue to gain traction, including those that involve parent training, in part because they emphasize opportunities for people with ASD to establish positive social connections and generalize their skills in the natural environment. Interest in these approaches has also arisen in response to limitations identified in traditional behavioral approaches to ASD in terms of generalization of targeted behaviors, particularly those related to the social use of communication and language (Wetherby & Woods, 2006, 2008). This book focuses primarily on such approaches because of their special promise in addressing the social communication and social interaction challenges at the core of ASD and their potential to minimize barriers to the functional application of learning.

In the traditional behavioral approach, practitioners teach skills one-to-one with a predetermined correct response (Karsten & Carr, 2009; Newman et al., 2009; Prelock & Nelson, 2012) and a highly prescribed teaching structure (e.g., discrete trial training [Cooper et al., 2007]). In contrast, in a social-pragmatic developmental approach, the interventionist follows the child's lead, fosters initiation and spontaneity, and reinforces contingent responses. Several strategies consistent with these approaches have long been implemented as part of naturalistic communication and language interventions for children with a variety of communication and language challenges (Girolametto et al., 1996; Kaiser et al., 2000; Kaiser & Hester, 1994) and have more recently been elaborated upon and modified to address the special challenges presented by ASD.

Several of the interventions described in this text capitalize on the value of integrating the best of behavioral and developmental approaches to achieve functional and relevant social and communicative outcomes for children, adolescents, and adults with ASD. For example, Prizant and Wetherby (1998), recognizing the contributions of both a traditional behavioral and older developmental approaches

to intervention, proposed **contemporary behavioral interventions** (i.e., middle ground interventions) to support the communication and social interaction needs of children with ASD. In particular, they described the value of giving children choices, sharing communication opportunities between the interventionist and the child, and using preferred activities and materials—strategies that characterize pivotal response training (Koegel, Koegel, Harrower, & Carter, 1999; Koegel, Koegel, Shoshan, & McNerney, 1999).

As intervention approaches have evolved, so too have comprehensive guidelines for best practices. In 2001, the National Research Council (NRC) offered a description of best practices for children with ASD through the early childhood years. A number of intervention guidelines emerged from a comprehensive review of the literature, including initiating treatment as soon as possible; ensuring active engagement during intensive instruction; using developmentally appropriate, goal-based, and systematically planned activities; implementing planned teaching opportunities throughout the day; and involving families and peers in the intervention to facilitate generalized skill learning. Many early intervention programs have used these best practices to design comprehensive educational programs for young children with ASD.

As a follow-up to the NRC (2001) description, Iovannone and colleagues (2003) proposed six educational practices as appropriate and effective for school-age children with ASD: 1) providing individualized supports and services that matched a student's profile as defined through the individualized education program (IEP) process; 2) offering systematic, carefully planned, and defined instructional procedures to achieve valid goals with a process for measuring outcomes; 3) creating a structured learning environment; 4) adding specialized curriculum content in the area of social engagement and recreation and leisure skills; 5) defining a functional approach to problem behaviors; and 6) engaging families in their student's educational success. Challenges remained, however, in determining the most effective instructional procedures for children of varying ages, language abilities, and cognitive levels with diagnoses of autism and subthreshold diagnoses, such as Asperger syndrome and PDD-NOS.

To address the gaps in the intervention effectiveness literature for the large heterogeneous group of children with ASD, in 2009 the National Autism Center (NAC) (https://www.nationalautismcenter.org) released a report of a comprehensive review of 775 intervention studies since 1957. In that report, the authors categorized the current level of evidence for several interventions typically used in the treatment of individuals with ASD (0–21 years). The interventions fell into one of four groups: established, emerging, unestablished, or ineffective/harmful, although no interventions were identified in the ineffective/harmful group. Behavioral treatments were identified as having the strongest support, and nonbehavioral approaches were identified as making a significant contribution but requiring more research (NAC, 2009).

In 2015, the NAC published a second report, examining research from 2007 to 2012, including any intervention research for those with ASD over 22 years of age (from 1987 to 2012), collapsing a couple of the behavioral packages under behavioral interventions and adding a couple of intervention categories. Their findings continued to support behaviorally based interventions, although limited research was found for adults over 22, with only 28 studies meeting the inclusion criteria, finding one established, one emerging, and four unestablished interventions for adults

with ASD. Notably, however, the 2015 NAC report added three interventions to the established category for individuals from birth to age 21: 1) language training (specifically language production using behavioral principles); 2) parent training; and 3) a social skills package. The report's chapter on behavioral interventions speaks to some of the more recent work in language production training. This second edition of *Treatment of Autism Spectrum Disorder* includes two new chapters that involve parent training, which adds to the three chapters from the first edition that already focus on the value of parent training, and this edition also features a new chapter on social skills training.

Table 1.2 lists the 14 interventions included in this book according to their level of evidence at the time of the most recent publication of the National Standards Project (NAC, 2015). Established treatments are those identified with sufficient evidence leading to positive outcomes. Emerging treatments are those with one or more studies yielding positive outcomes but requiring additional high-quality studies to show consistent results. Unestablished treatments are those with little evidence and that consequently require additional research. No treatments are those judged to be ineffective or harmful. Interventions described in this book fall primarily within the top two categories of evidence—established and emerging; only one intervention (DIRFloortime, Chapter 7) is considered unestablished, although it involves parent

Table 1.2. Levels of evidence for interventions included in this book based on the National Standards Project

Level of evidence	Level description	Chapter	Intervention
Established (14 interventions identified)	Sufficient evidence that the intervention leads to positive outcomes	6	Behavioral intervention strategies
		9	Joint attention intervention
		10	Enhanced Milieu Teaching (EMT)
		12	Peer-mediated support strategies
		13	Pivotal Response Treatment (PRT)
		15	Social skills training
		16	Social Stories
		17	Video modeling
Emerging (18 interventions identified)	One or more studies yielding positive outcomes, but study quality and results are inconsistent	4	Augmentative and alternative communication (AAC), including Picture Exchange Communication System (PECS)
		8	Functional communication training
Unestablished (13 interventions identified)	Little evidence and requiring additional research	7	Floortime and the Developmental, Individual-difference, Relationship-based (DIR) model
Not specifically named in the NAC report but all involve parent training, which is an established intervention	—	5	Early Start Denver Model
		11	Early Social Interaction Project
		14	The SCERTS® Model

From National Autism Center (2009). *National Standards Project—findings and conclusions: Addressing the needs for evidence-based practice guidelines for autism spectrum disorders*. Randolph, MA: Author; adapted by permission.

training, which is an established intervention. Also, three interventions are included that relate specifically to parent training (i.e., Early Denver Start Model [Chapter 5], Early Social Interaction Project [Chapter 11], and The SCERTS® Model [Chapter 14]) that were not specifically named in the 2015 NAC National Standards Project report. With the National Standards Project as a guide for evidence-based practice with children and youth affected by ASD, this text is timely because it emphasizes key established and emerging interventions used to facilitate the communication and social interaction of individuals with ASD and highlights those interventions with parents playing a key role.

PURPOSE OF THE BOOK

This book describes and critically analyzes specific treatment approaches used to address the communication and social interaction challenges of children, adolescents, and adults with ASD. Although these challenges are of specific interest to speech-language pathologists, providers across disciplines have a stake in using evidence-based intervention to respond to these core areas of impairment for individuals with ASD. Approaches selected for inclusion have empirical evidence of efficacy or effectiveness established through systematic reviews or at least two peer-reviewed articles that indicate the approaches are well-established, probably efficacious or promising emerging interventions (e.g., Chambless et al., 1998; Chorpita et al., 2002; NAC, 2015).

Traditionally, randomized control trials (RCTs) are considered the gold standard for evaluating treatment efficacy. RCTs, however, are rare in many clinical fields. In contrast, single-subject experimental designs are underacknowledged in evaluating treatment efficacy (Barlow et al., 2009; Perdices & Tate, 2009), yet they constitute the majority of credible evidence in the intervention research in autism (Debodinance et al., 2017; Odom et al., 2003). Single-subject designs make important contributions to the research base on treatment when they 1) are replicated across behaviors, participants, and contexts; 2) measure change reliably and systematically; 3) have established implementation fidelity; and 4) are socially valid. In fact, results from many single-subject designs indicate that specific interventions are associated with positive learning outcomes for individuals with ASD (Lord et al., 2005). Therefore, the effectiveness of selected treatments included in this book has been established primarily through single-subject experimental designs, although instances of randomized control trials do exist (e.g., joint attention training using the JASPER model).

Table 1.3 provides a summary to facilitate the reader's understanding of the similarities and differences among the interventions in terms of basic principles, techniques, teaching methods, treatment targets, and ages for which evidence has been established. This table also identifies the evidence rating provided by the National Autism Center (2015). In addition, to make the treatments accessible to the reader and to facilitate their comparison, the table's descriptions were standardized using a template adapted from that used in McCauley and Fey (2006) in which critical features of each treatment are highlighted. Treatments are also illustrated by a short video example, which can be accessed on the Brookes Download Hub (see the About the Videos and Downloads page in the front matter for guidance on how to access the video clips).

Readers will learn that the interventions emphasize somewhat different principles, techniques, and teaching methods to foster communication and social

Table 1.3. National Autism Center (2015) categorization of featured interventions

Interventions	NSP rating[a]	Basic principles	Methods	Targets	Ages
AAC including PECS (Chapter 4)	Emerging	Social-pragmatic and behavioral	Assessment of partner and environmental influence AAC system and target vocabulary selection Meaningful contexts Responsive partners Natural environment Family and person centered Systematic teaching Time delay Direct, natural reinforcement Shaping Modeling Prompting Visually based	Enhance existing communication skills Expand language Replace speech Provide structure to support language development Initiate requests spontaneously Request reinforcing items or activities, help, or a break Reject offers for undesired items or activities Affirm offers for desired items or activities Follow a direction to wait Respond to directions Follow transitional cues and visual schedules	Toddler through adult
Early Start Denver Model (Chapter 5)	Not specifically reported but is parent training focused, which is established	Developmental and behavioral	Play Relationship building Applied behavior analysis techniques Naturalistic developmental behavioral techniques including natural interactions, shared control, natural contingencies Group-delivered ESDM Parent-delivered ESDM Implementation fidelity	Receptive and expressive language Social skills with adults and peers Joint attention Imitation Play	1–5 years

Behavioral intervention strategies: discrete trial learning, differential reinforcement, and shaping (Chapter 6)	Established	Behavioral	Adult-directed, individualized one-to-one instruction Predetermined correct responses Contingent or differential reinforcement Shaping behaviors Operant conditioning Massed trials Maintenance trials Mand-modeling	Communication, social, and adaptive skills Use of verbal operants (e.g., mands, tacts, echoics, intraverbals)	3–21 years
DIR Floortime (Chapter 7)	Unestablished	Developmental	Family based Child directed Interpersonal development Individual differences Caregiver–child relationships Parent and clinician implemented	Shared attention and regulation Engagement and relating Two-way intentional communication Complex problem solving Creative representations and elaboration Representational and emotional thinking	18 months–9 years
Functional communication training (Chapter 8)	Emerging	Behavioral	Functional behavior assessment Selection of an alternative behavior Fading prompts Response match, success, efficiency, acceptability, recognizability, and milieu Natural communities of reinforcement	Replacement of aggression, self-injury, elopement, and inappropriate sexual behavior with functional communication forms	3–21 years
Joint attention: JASPER Model (Chapter 9)	Established	Behavioral and developmental	Directed instruction Individualized Intensive Milieu teaching Parent and clinician implemented	Response to and spontaneous initiation of joint attention	3–5 years
Enhanced Milieu Teaching (Chapter 10)	Established	Behavioral and developmental	Environmental arrangement Responsive interaction Language modeling Milieu teaching Parent and clinician implemented	Productive, spontaneous, and meaningful use of new language forms Initiations and responses	3–9 years

(continued)

Table 1.3. *(continued)*

Interventions	NSP rating[a]	Basic principles	Methods	Targets	Ages
Early Social Interaction (Chapter 11)	Not specifically reported but is parent training focused which is established	Developmental	Family based Child directed Environmental arrangement Responsive interactions Preferred activities and materials Routine based Natural environment	Social communication from preverbal to multiword stage Gesture use Initiation of and response to joint attention Word knowledge Reciprocity	18 months–3 years
Peer mediation (Chapter 12)	Established	Behavioral	Peer interaction training Peer network strategies Regular opportunities to interact within and outside instructional settings Adult coaching, guidance, and support Inclusive environment Communities of reinforcement Instructional arrangements (e.g., cooperative groups, peer support arrangements)	Initiating and maintaining conversation Exchanging compliments Turn-taking Helping behaviors Sharing materials Collaborating on assignments Making introductions Conversing about shared interests	3–14 years
Pivotal Response Treatment (Chapter 13)	Established	Behavioral and developmental	Play based Family based Natural environment Routine based Child choice Turn taking Shared control of teaching opportunities Direct and natural reinforcement Reinforcing communication attempts Preferred activities and materials Interspersing maintenance tasks within teaching sessions	First words Basic social skills Sophisticated language and social skills Pivotal behaviors (e.g., motivation, responsivity to multiple cues, self-management, self-initiations)	3–9 years

Social Stories (Chapter 16)	Established	Social-pragmatic	Visually based Situation specific Individualized instructional strategy (determine topic, gather information, develop the story, consider additional supports, critical review, introduce story, generalization training, maintenance and fading)	Reduction of disruptive behaviors (e.g., tantrums, aggression, self-injurious acts) Establish routines Introduce changes in routines Understanding of a new or unfamiliar event Social skills (e.g., getting a peer's attention, making choices, playing independently, peer engagement and participation) Communication (e.g., reduction of echolalia, interrupting, and loud talking)	6–14 years
Video modeling (Chapter 17)	Established	Behavioral and developmental	Visually based Viewing positive video models Adult and peer modeling Point-of-view modeling Self-modeling including feed forward and positive self-review	Teach new skills or improve existing skills across developmental domains (e.g., self-help skills—dressing, feeding, washing; cognitive skills—play, perspective taking, attention; social skills—conversation, prosody, turn-taking; language skills—question asking and answering, greeting, comprehending stories) Replace or extinguish maladaptive behavior	3–18 years
The SCERTS® Model (Chapter 14)	Not specifically reported but is parent training focused which is established	Developmental	Collaboration Curriculum-based assessment Natural routines	Social communication Emotion regulation Transactional supports	Preschool through school age
Social skills interventions (Chapter 15)	Established	Social-pragmatic and behavioral			

[a]*Source:* National Autism Center. (2015).

Key: AAC, augmentative and alternative communication; ESDM, Early Start Denver Model; JASPER, Joint Attention, Symbolic Play, Engagement, and Regulation; PECS, Picture Exchange Communication System; SCERTS, Social Communication, Emotional Regulation, and Transactional Supports.

development in children, adolescents, and adults with ASD; therefore, there is not one best approach for all individuals. Instead, there are profiles of individuals affected by ASD who are likely to benefit most from each intervention guided by the evidence. Early, intensive, and structured intervention as well as a collaborative approach to working in home, educational, and community settings appear to be critical features of effective intervention. Further, this book emphasizes the importance of addressing the core deficits of social interaction and social communication.

HOW TREATMENTS ARE DESCRIBED

Authors prepared their intervention chapters, Chapters 4–17, using a template, with sections indicated by the headings provided in Table 1.4. Each chapter begins with a brief introduction summarizing the treatment approach and defining the subgroups of individuals with ASD for whom the treatment is designed. The chapter also includes the age, developmental level, language level, and service delivery model the treatment entails, including its basic focus and methods. In the description of the subgroups for whom the intervention is appropriate, the authors consider not only the specific diagnoses (e.g., autism spectrum disorder, social communication disorder) but also the individual's level of verbal skills and cognitive abilities.

The next section in each chapter includes the theoretical basis for the treatment approach. Here the authors discuss four main components. The first component is a theoretical explanation or rationale for the treatment. The second component includes underlying assumptions regarding the nature of the communication and social interaction impairment being addressed by the treatment. The third component describes the functional outcomes or desired consequences (e.g., increase joint attention, facilitate social interaction, foster communication and symbol use) being addressed. The final component highlights the treatment target (e.g., language or social functioning).

The theoretical basis is followed by a summary of research providing an empirical basis for the treatment. In this section, the authors summarize and interpret studies providing evidence that supports the use of the treatment. Authors have prepared a level of evidence table in which they present the major research designs used to examine the intervention and the outcomes reported for both group and single-subject research. Where possible, effect sizes are reported as originally published or computed for the chapter when means and standard deviations were given.

To support practitioners' use of the described interventions in their specific settings, in the next section of each chapter, authors outline some practical requirements for implementing the treatment. This section of each chapter includes a discussion of time demands, training, or expertise required by clinicians wishing to use the intervention and any materials or equipment needed for treatment implementation.

Practical requirements are followed by a description of the key components of the intervention approach. The goal for this section is to ensure the reader has a strong, preliminary understanding of the procedures. Authors provide information about the nature of the goals addressed by the intervention, how multiple goals are addressed over time (e.g., sequentially, simultaneously, cyclically), a procedural or operational description of activities within which the goals are addressed, and the nature of involvement of participants beyond the clinician and child (e.g., peers, siblings, teachers, primary caregivers). (Several of the authors also reference training

Table 1.4. Description of the topics addressed in each section of the treatment chapters

Section	Content
Introduction	Overview of the intervention is provided, including the specific individuals for whom it is designed and their age (i.e., infants/toddlers, children, adolescents, adults), developmental level, and language level. The service delivery model involved, the intervention's basic focus, and its primary methods are highlighted.
Target populations	Description of those subgroups on the autism spectrum (i.e., autistic disorder, Asperger disorder, pervasive developmental disorder-not otherwise specified, Rett disorder, and childhood disintegrative disorder) for whom the intervention is primarily designed and for whom there is empirical support for its use. Level of verbal skills and cognitive abilities are also discussed. Assessment methods used to establish the appropriateness of the treatment for an individual child, adolescent, or adult with autism spectrum disorder (ASD) are presented.
Theoretical basis	Description of the dominant theoretical explanation or rationale for the treatment approach, underlying assumptions regarding the nature of communication and social interaction impairment being addressed by the treatment, the functional outcomes being addressed, and the area of treatment being targeted.
Empirical basis	Comprehensive summary and interpretation of studies providing evidence that supports the use of the intervention, including descriptions of the experimental design and treatment effects for both group and single-subject research, the nature of outcome data reported (e.g., standardized testing vs. naturalistic probes), intervention fidelity, maintenance and generalization of treatment effects, and social validity
Practical requirements	Description of the time and personnel demands for the primary clinician and related other participants, whether or not a team approach is used, required training of personnel involved, or materials required
Key components	Description of the goals addressed by the intervention, how multiple goals are addressed over time (e.g., sequentially, simultaneously, cyclically), activities within which the goals are addressed, and involvement of participants beyond the clinician and child (e.g., peers, siblings, teachers, primary caregivers)
Assessment for treatment planning and progress monitoring	Description of the major assessments and assessment points used to reach decisions about 1) the appropriateness of the intervention; 2) initial and subsequent treatment targets, etc.; 3) advancement through treatment; and 3) treatment termination
Considerations for children from culturally and linguistically diverse backgrounds	Discussion of the applicability of the intervention to children from linguistically and culturally diverse backgrounds and ways in which the intervention might be modified to be most appropriate
Application to a child	Description of a real or hypothetical case of a child illustrating the implementation and effectiveness of the treatment approach
Application to an adolescent or adult	Description of a real or hypothetical case of an adolescent or an adult, illustrating the implementation and effectiveness of the treatment approach
Future directions	Discussion of additional research needed to advance the refinement or ongoing validation of the intervention across populations of individuals with ASD and related neurodevelopmental disabilities
Suggested readings	Summary of a few readings of greatest use to readers who might want to know more about the specific intervention
Learning activities	Topics for further discussion, ideas for projects, questions to test integration of the reading material, and possible writing assignments to facilitate the readers' learning

manuals, which can support a more thorough understanding of the procedures involved in the intervention they describe.)

Assessment methods used to establish the appropriateness of the treatment plan and progress monitoring for an individual child, adolescent, or adult with ASD are presented in the next section. Recognizing the critical role of data to guide practice, this section of each chapter also describes data collection methods to support decision making. The authors provide descriptions of how data are collected, ways to evaluate progress, strategies for determining when and how adjustments should be made, and when the intervention approach should be terminated. They explain how data collection is used to guide ongoing treatment decision making and to assess immediate and long-term outcomes.

This section is followed by implications for inclusive practice, offering examples where the intervention can be applied in the home, school, work, and/or community setting. Considerations for implementing the intervention for children from culturally and linguistically diverse backgrounds are described in the final section before specific applications are made to children, adolescents, or adults. The authors offer guidance in planning modifications related to the particular cultural and personal factors affecting an individual child, adolescent, or adult while ensuring consistency in the treatment approach.

In the next two sections, the authors provide a description of potential applications of the intervention to a child and to an adolescent or adult. They offer two brief case studies: one of a younger individual with ASD for whom the treatment is considered appropriate and effective and one of an adolescent or adult for whom the treatment is considered appropriate and effective if, in fact, the intervention is appropriate for older individuals.

The final content section of each chapter is a description of directions for future research needed to advance the development or ongoing validation of the intervention approach across populations of individuals with ASD and related neurodevelopmental disabilities. This is followed by three to five suggested readings the authors believe represent important further details or background about the intervention as well as learning activities the authors pose to facilitate further discussion, ideas for projects, questions to test integration of the reading material, and possible writing assignments. In addition to a comprehensive set of references at the end of each chapter, a glossary of key words is provided at the end of the book, with these key words bolded in the text to inform readers that more information about them is available in the glossary. Finally, a summary of the video clip to illustrate the intervention is provided.

NEW COMPONENTS

This book includes two new chapters beyond the intervention chapters to facilitate the reader's use of the book. Chapter 2 highlights the importance of assessment to treatment planning and progress monitoring. The context for assessment is discussed recognizing the importance of a family-centered, culturally informed approach that is both interdisciplinary and comprehensive. The role of screening and diagnostic testing to identify the presence of ASD and comorbid conditions is also described, but more briefly. This chapter includes approaches to identifying severity and creating profiles of social communication and social interaction challenges. Most important, this chapter provides strategies for monitoring change over time.

Chapter 3 highlights the language and communication strengths and challenges most often seen in children with ASD, as these have implications for intervention. Early communication challenges are discussed, including intentional communication, gesture use, word learning, and the use of unconventional verbal behavior. The chapter emphasizes those challenges that specifically impact language development, social communication, and social interaction, such as impairments in joint attention, play, and theory of mind. This chapter is designed to help the reader understand what researchers know about the syntactic, semantic, phonological, and pragmatic development of children with ASD and what the implications are for intervention.

In addition to these changes in the content included in this second edition, a companion resource, *Case Studies for the Treatment of Autism Spectrum Disorder* (Prelock & McCauley, 2021), is offered as an optional supplementary resource. Through 14 individual cases, readers are introduced to hypothetical but instructive scenarios posing the kinds of clinical problems that face clinicians who wish to devise comprehensive services for clients with ASD. Although there is particular focus on social communication and social interaction difficulties, the multitude of co-occurring problems that so often complicate the decision making required for effective management in ASD are incorporated to provide a real-world flavor. Alongside decisions recommended by experts, the casebook includes decision-making exercises that can enrich readers' understanding of social communication and social interaction challenges as well as the possible strategies that can help address them.

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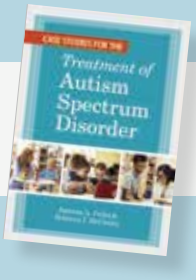

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