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Assessment for the Purpose of Instructional Planning for Students with Autism Spectrum Disorders

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CHAPTER OBJECTIVES

After reading this chapter, learners should be able to

1. Describe components of a core battery for the assessment of students with ASD.
2. List two standardized tests that can be used to assess each domain included in the core battery and discuss their pros and cons.
3. Explain the difference between formal and informal assessment measures and the utility of each approach in instructional planning for students with ASD.
4. Describe common characteristics of individuals with ASD and how they may affect (a) the child's ability to engage in the evaluation process and (b) the selection of evaluation procedures.
5. Discuss the pros and cons of "breaking standardization" during assessment.
6. Describe the type of information that can be obtained through observations of the child during test administration.
7. Summarize the National Research Council's recommendations for educating children with ASD, including the "characteristics of effective interventions" and the "six kinds of interventions that should have priority."
8. List several assessment instruments and curricula that can be used to assist in identifying developmentally appropriate goals and objectives for students with ASD.



CASE STUDY Examples

Case of Nicole

Nicole is 4 years and 1 month old. She was evaluated to determine an appropriate diagnosis for her and to consider potential program options for her. Currently, Nicole has a formal diagnosis of language disorder by her neurologist, but the possibility of an Autism Spectrum Disorder has been raised. According to parent report, Nicole experienced a regression in her language skills between the ages of 2 and 3 years, particularly with respect to the desire to speak. Nicole's mother reported that Nicole will often avoid eye contact and does not show an interest in approaching other children to play, although she does respond positively to peers' approaches. Nicole also is delayed in the areas of pretend play and use of gestures and often has difficulty answering simple questions. In addition, Nicole has overly intense areas of interest (such as numbers, letters, and words) and will form "attachments" to objects which she may insist on carrying with her (e.g., an Easter basket with letters on it).

Evaluation of Nicole consisted of parent interview and administration of an autism diagnostic measure (the ADOS) and a developmental battery (the Mullen Scales of Early Learning) to Nicole. On the ADOS, Nicole met cut-offs for autism in the areas of Qualitative Impairments in Reciprocal Social Interaction (score = 11; cutoff = 7) and Communication (score = 6; cutoff = 4), resulting in a total score of 17, which also exceeded the cutoff for autism (cutoff = 12).

Nicole's performance on the Mullen indicated that, overall, she is performing within the Very Low range of intellectual functioning (SS = 54, 1st percentile). Her skills were relatively evenly delayed across the areas of fine motor development (8th percentile, Age-Equivalent = 42 months), expressive language (1st percentile, Age-Equivalent = 29 months), receptive language (1st percentile, Age-Equivalent = 23 months) and nonverbal problem solving (1st percentile, Age-Equivalent = 31 months).

What can we make of these results? Aside from answering the diagnostic question, there's probably not much else we can take from these findings, other than the fact that Nicole would likely meet criteria for a diagnosis of autism and that her cognitive skills are delayed. A much more useful approach for instructional planning would be to analyze the specific types of tasks that Nicole was able to complete successfully and compare them to those that were answered incorrectly. We could also obtain additional information that would be useful for instructional planning by reviewing the descriptions of her social, communication, and play behaviors on the ADOS. This information would help us describe her present levels of performance and identify priority educational needs (PENS).

On the fine motor domain of the scale, Nicole was able to string beads, stack 12 blocks vertically, imitate a 4-block train, cut a 1-inch strip of paper, reproduce a number of drawings with a crayon (circle, diagonals, square, and line), and draw in a path while staying inside the lines. She had difficulty when asked to screw and unscrew a nut and bolt, cut a 2-inch paper strip, fold paper according to a model, and could not copy letters or words. She was also observed to have difficulty writing her name, although it was not part of the assessment battery. With respect to Nicole's visual reception (i.e., nonverbal problem solving) skills, she was able to sort objects by category (spoons vs. blocks), match shapes and pictures, match by size and color (simultaneously), and recall pictures and object placements after a delay. She was inconsistent in her ability to match letters and discriminate

spatial positions in drawings and was unable to demonstrate number awareness (“give me six blocks”). However, letters and words were observed to be a high interest area for Nicole. While she had difficulty with the matching task on this test, observations indicate that she can name all the capital letters of the alphabet and can read some words. Thus, her score on this subtest may not accurately depict her skill level in this area.

In the area of receptive language, Nicole recognized body parts and colors, comprehended basic questions, and followed two-step related commands. However, she was much more inconsistent in her ability to point to pictures of named items (e.g., shoe, doll) and action words (e.g., eating, sleeping) and was unable to correctly identify positional concepts (e.g., in, behind, under, beside), follow two-step unrelated commands, or identify objects according to their function. Expressively, Nicole was able to repeat two-number sequences (e.g., 3–4, label pictures of common objects. She consistently used two-word phrases and inconsistently spoke in three- to four-word sentences but did not spontaneously use pronouns. She could count to 3, but had difficulty when asked to count to 12.

Based on the above description of the tasks that Nicole was able to perform during a commonly used standardized developmental assessment, it is clear that the addition of this information will also allow us to create a much more meaningful description of her present level of performance than we would have been able to by reviewing her scores alone. In addition, we were also able to outline four priority educational needs to address in an Individualized Education Program (IEP) for Nicole.

Case of Bobby

Bobby is a 16-year-old high school student who was diagnosed with autism when he was 2 years old. At the present time, Bobby’s parents are most concerned about his increasingly challenging behavior and wish to obtain updated information regarding his overall abilities, insight into the function of his challenging behavior, and strategies for intervention. Overall, the goal of the evaluation was to assist the family with behavioral and educational planning for Bobby. Bobby was administered several tasks in order to estimate his nonverbal cognitive abilities, which were found to be in the mildly impaired range (WISC-IV Perceptual Reasoning Index = 55; DAS Nonverbal Composite = 60). Adaptive behavior functioning (ABAS-II General Adaptive Composite = 48) was also in the impaired range.

Behavioral observations included as part of the evaluation contributed a great deal of information about Bobby’s functioning and suggest areas to target for intervention. In general, Bobby appeared to prefer to engage in isolated activities, such as drawing, listening to music on his CD player, and watching videos. On occasion, Bobby would participate in short interactions where he would allow the examiners to comment on his activities and sometimes answered questions about what he was doing. In addition, Bobby’s behavior was observed to vary dramatically across situational contexts (i.e., unstructured, child-directed vs. structured, clinician-directed). Bobby was generally resistant when presented with structured activities, such as formal testing. He willingly reviewed a schedule of the day’s activities; however, he frequently and emphatically indicated displeasure about one or more of the activities (e.g., “No stories!”). It became apparent that Bobby was easily overwhelmed by the amount and perceived difficulty of the tasks. For example, he would look at a list of words on a reading/decoding task and exclaim, “It’s too much!” At such times, Bobby would refuse to begin the task. Attempts to minimize the amount of stimuli presented (e.g., covering lines and revealing them a row at a time), were usually successful in assisting

Bobby in initiating the task. However, Bobby would often stop in the middle of the task, stating “That’s enough!” “No more work!” or “It’s too hard!” He could sometimes be persuaded to continue with the promise of a break; however, at other times, the task had to be discontinued at that point (which he was often able to resume after a break). Typically, Bobby indicated his frustration with the task (e.g., “It’s too hard!”), while also expressing frustration toward the examiner (e.g., “Go away!” “Don’t come in again!” and “I’m not your friend!”). Despite Bobby’s apparent frustration, he would frequently continue with the task if the examiner ignored his disruptive behavior and redirected him to the task at hand by stating calmly that it was time to work and reviewing the day’s schedule. An additional strategy that was sometimes successful was having the examiner respond by stating that Bobby was hurting the examiner’s feelings and/or making the examiner sad. This tended to evoke an empathic response from Bobby (e.g., “What happened?”), and he would then begin working cooperatively for a short time.

Observations suggest that Bobby tends to become angry and/or frustrated when test questions began to exceed his ability level or when he perceives the tasks to be too “large” or difficult (even if they are within his ability level). In response to this “flood” of anxiety, Bobby attempts to escape or avoid the activity through whining or refusing (e.g., “It’s too many,” “Go away,” etc.). When these strategies are ineffective, Bobby’s behavior escalates and he begins to yell and/or “threaten.” While it was clear that the tasks were truly distressing for him, there also appeared to be a learned component to these behaviors. It is likely that these behaviors have been effective in allowing Bobby to escape from task demands and may have even influenced the type of demands that others place upon him. Further contributing to Bobby’s behavioral challenges are his language impairments. Bobby was not able to use his language to ask for assistance with difficult tasks, negotiate with others around the amount and type of work to be done, or use more socially desirable language to request that tasks be discontinued, especially when in an anxious or agitated mood state.

These observations illustrate the usefulness of a “process-oriented” approach to assessment. Instead of focusing primarily on cognitive and academic skills, the clinicians were able to contribute significantly to instructional planning by highlighting behavioral challenges and communicative difficulties that are critical areas to address in programming for Bobby. Further, the examiners focused on evaluating strategies for managing Bobby’s behavior during the assessment process (by using visual supports and altering the presentation format) which will allow educators to implement appropriate supports in the classroom during instructional activities.

INTRODUCTION

Assessment is a necessary step in the overall program planning for students with Autism Spectrum Disorders (ASD). However, students with ASD are likely to present unique challenges and issues during formal evaluation, which may impact the success of the evaluation process and the utility of the assessment data (Klin, Saulnier, Tsatsanis & Volkmar, 2005). Since instructional programming is based on information regarding a student’s present levels of performance and identification of priority educational needs (PENS), accurate and useful assessment data are critical to programming success (see Table 2.1)

This chapter will provide a summary of the symptoms and characteristics of ASD that will impact the assessment process and describe the components of a core “best practices” assessment of

TABLE 2.1 Present Levels of Performance, PENS, and Potential Skills for Intervention

Present Levels of Performance	Priority Educational Needs	Potential Target Skills
Can sort objects by category; match shapes, colors, and pictures; identify uppercase letters; and read a few words	Cognitive Skills	<ul style="list-style-type: none"> • Identify lowercase letters • Match letters and words • Sight word recognition • 1:1 correspondence
Can follow simple one- and two-step commands, and receptively identify body parts and colors	Receptive Language	<ul style="list-style-type: none"> • Follow two-step unrelated commands (hang up your backpack and go sit down) • Receptive vocabulary: nouns, verbs, object functions and prepositions
Speaks in short (two- to three-word) phrases and can label pictures of objects	Expressive Language	<ul style="list-style-type: none"> • Expand length of utterances to three- to four-word sentences • Use pronouns in spoken language • Expressive vocabulary for verbs (action words) • Counting to 20
Can copy shapes and cut 1-inch strips of paper	Fine Motor Skills	<ul style="list-style-type: none"> • Cut 2- and 3-inch paper strips • Cut shapes • Write her name and uppercase letters

individuals with ASD. Formal and informal assessment procedures and instruments for the evaluation of ASD will be described. Finally, this chapter will close with a description of recommendations for necessary areas of intervention and curricula.

SYMPTOM PRESENTATION IN ASD

Autism Spectrum Disorders are included under a class of disorders referred to as Pervasive Developmental Disorders (PDDs) within *the Diagnostic and Statistical Manual of Mental Disorders—Fourth Edition—TR (DSM–IV–TR; APA, 2000)*. The *DSM–IV–TR* lists five specific PDDs: Autistic Disorder, Asperger’s Disorder, Pervasive Developmental Disorder—Not Otherwise Specified (PDD-NOS), Rett Disorder, and Childhood Disintegrative Disorder. These disorders are diagnosed based on a set of criteria provided in the *DSM–IV* and include impairments in three general domains of functioning:

- Delayed and atypical development in social reciprocity and relatedness
- Delayed and atypical development of language, communication, and play skills
- The presence of repetitive and restricted patterns of behaviors, interests, and activities

In addition, individuals with ASD may also exhibit associated disturbances in areas such as cognition and information processing, attention, executive functioning, and sensory processing. These core ASD deficits and associated impairments will ultimately have a direct effect on the assessment process.

Social Impairments

Due to deficits in the social domain, clinicians will often find that it is more difficult to establish **rapport**, or a comfortable cooperative relationship, with the student during the evaluation process. Students with ASD may not respond to the usual methods of establishing rapport, including the use of informal conversation and the use of social praise to motivate the child to cooperate with the testing procedures. In addition, children with ASD (particularly younger children) may be unfamiliar with basic social behaviors that will impact the evaluation process and the child's performance, such as sitting quietly at a table, taking turns, or returning test materials after an item is completed. Finally, impairments in the use and understanding of nonverbal communication (such as eye contact and gesture use) may lead the child to miss important components of task instructions and/or respond in line with test specifications (such as pointing to the correct answer).

Language/Communication Impairments

Language and communication deficits also present major challenges to conducting an effective evaluation. The majority of children with ASD have receptive language difficulties. This is true even for "higher-functioning" individuals with ASD who have cognitive and expressive language abilities that are within the expected range for their age (Filipek et al., 1999). These difficulties may impact the ability of the child to adequately understand orally presented instructions, which will certainly impact task performance. For some children, there is also a great deal of scatter in their receptive language skills, with understanding of more difficult words and concepts in the face of unfamiliarity with easier vocabulary. This discrepancy often results in inconsistent responding patterns that may be interpreted as noncompliance by the examiner. Such receptive language problems, and attempts by the examiner to "gain compliance," increase the likelihood of behavioral problems during the evaluation, which stem from language expectations which are too high for the child's abilities.

Further, even for those individuals with adequate receptive language skills, deficits in pragmatics (use of language in a social context) may still be apparent. Such difficulties may include a tendency to be overly literal and concrete in interpreting instructions and problems with interpreting nonverbal behaviors and turn-taking skills. The effect of these pragmatic language difficulties on the evaluation process, however, may be more difficult to initially notice. As an example, a student who was asked to produce a written essay on an academic achievement test repeatedly refused to begin the task, stating that he didn't "know how to." At this point, it would be common for the examiner to move on to the next item and/or task with the assumption that the student lacked the necessary skills to correctly respond to the test item. Upon follow-up questioning by the examiner, it became apparent that the student did, in fact, have experience writing essays. However, he knew how to write an essay only in French. Apparently, the student had written essays only in French class and was unable to spontaneously apply that experience to the current testing situation. The student readily began the task when the examiner indicated to "write the essay just like you would in French, but use English instead."

Finally, expressive language difficulties also affect task performance in the testing environment. Many cognitive assessment measures assess verbal as well as nonverbal problem-solving skills. For students who are nonverbal or minimally verbal, requirements of verbal subtests will likely be beyond their language abilities. Students with better language abilities are likely to be able to respond to such tasks, but may still encounter problems. Difficulties may include word-finding problems and difficulty formulating and generating answers and/or the use of unusual or idiosyncratic language which may impact the examiner's understanding of their responses.

Presence of Restricted, Repetitive, and Stereotyped Interests, Behaviors, and Activities

The behavioral challenges inherent to ASD also create unique problems during the testing session. Students with ASD often exhibit strong interest in idiosyncratic objects and events that will affect manipulation of the testing materials (such as flapping materials, rubbing surfaces, and/or visual inspection of items). Thus, it may be quite difficult to obtain cooperation from the child in using materials as intended, retrieving materials from the child to demonstrate the task, and/or removing the materials in order to present the next task. In addition, students may be overly reliant on routines and often have extreme reactions to changes. Interrupting or redirecting the child in such instances may trigger a variety of behavioral responses that can interrupt assessment procedures.



BOX 2.1 Diversity Notes

A commonly accepted premise today is that autism “knows no racial, ethnic, or social boundaries” according to the Autism Society of America. Unfortunately, the accuracy of this premise is called into question as researchers (and clinicians alike) have tended to pay little attention to racial and/or cultural differences in autism. Dyches and colleagues present a provocative paper raising a number of questions for further examination in the field. Specific questions for consideration included:

- Are there differences in the prevalence of autism across race/ethnicity?
- Are there factors that may influence children from different races/cultures who are identified as having an ASD (including cultural differences in how symptoms are viewed and defined, stigmatization of disability status, potential bias from clinicians in diagnosis, etc.)?
- Are there differences in family adaptation to the autism diagnosis?

Dyches and colleagues suggest that the relative paucity of research into the specific challenges faced by families from diverse backgrounds should be a concern to the professionals who work with these families. Because of the paucity of research in this area, what we know about the characteristics of best practice in assessment and intervention for ASDs may not apply to individuals and families of different cultural, racial, and/or ethnic backgrounds.

Source: Information from Dyches, T. T., Wilder, L. K., Sudweeks, R. R., Obiakor, R. E., & Algozzine, B. (2004). Multicultural issues in autism. *Journal of Autism and Developmental Disorders*, 34, 211–222.

THE SPECTRUM NATURE OF ASD

Another important consideration for assessment is the spectrum nature of ASD. Autism is referred to as a “spectrum” condition, meaning that the symptoms of ASD fall along a spectrum, or continuum. As the word “spectrum” implies, ASD affects each individual differently and to varying degrees. Figure 2.1 presents the characteristics of ASD that may impact the assessment process. Symptoms can occur in any combination and can range from the very mild to the severe. In addition, individuals may differ significantly in their overall language and cognitive abilities. In the area of language development, children may range from completely nonverbal to highly verbose. Further, individuals also vary along a continuum with respect to cognitive functioning, from the mental retardation/intellectual disability range to the gifted range. However, there is some evidence that there may be changes in the number of individuals who fall within the intellectually disabled range.

- Difficulty establishing rapport with examiner
- Lack of motivation to please examiner
- Limited flexibility and/or overly reliant on nonfunctional routines or rituals
- Difficulty understanding and following instructions and generating verbal responses due to language deficits
- Unique learning profiles
 - Stimulus overselectivity (such as attending to irrelevant stimuli, difficulty switching between tasks, and a desire to use materials in unique or unusual ways)
 - Attending to materials, and persisting in completing tasks
 - Inconsistent responding across items on a task
 - Inability to demonstrate skills that child can do at home (generalization problems)
- Interfering and challenging behaviors

FIGURE 2.1 Characteristics of Students with ASD That Affect the Evaluation Process

While the prevalence of comorbid mental retardation/intellectual disability in ASD was estimated to be approximately 70% to 75% of individuals during the previous decade (Filipek, et al., 1999; National Research Council, NRC, 2001), more recent prevalence studies now report rates of comorbid intellectual disability of just under 50% (Yeargin-Allsopp, Rice, Karapurkar, Doernberg, Boyle, & Murphy, 2003).

Thus, the spectrum nature of ASD results in a great degree of heterogeneity across children which is likely to affect the process of conducting the evaluation; there will be no “one size fits all” approach to testing strategies and instrument selection, requiring a great deal of knowledge and flexibility on the part of the examiner.

Learning Challenges Associated with ASD

Students with ASD often exhibit uneven learning profiles marked by “scatter” in skill development. Such students may function at or above age level in some areas, but well below age level in others. This pattern also results in a scattered profile of results on formal testing measures, as well as inconsistent performance within individual subtests that will affect not only test results but instructional programming as well.

Coupled with inconsistent skill acquisition, students with ASD also exhibit inconsistencies in responding, even for skills that have been mastered. Such difficulties are frequently referred to as problems with **generalization**. Despite having acquired given skills, individuals with ASD often have difficulties “showing what they know” in the evaluation setting and fail to demonstrate skills that they can successfully perform in the home and/or at school. Generalization difficulties also can manifest as an inability to demonstrate a skill under different conditions than those in which the skill was learned (e.g., with different materials and/or verbal instructions). Deficits in skill **maintenance** are also characteristic of children with ASD; children may “lose” skills if they are not consistently practiced and/or used in the child’s daily life. Again, these difficulties have implications for the testing setting, as parents often proclaim that the child possesses skills that were not exhibited during the evaluation session. This is often an accurate statement; however, difficulties with generalization and maintenance of skills have direct relation to instructional programming. Skills that have been “mastered” but cannot be demonstrated across people, settings, and materials should take first priority as instructional goals and objectives.

Challenges may also be displayed in areas associated with the core deficits of ASD. For example, there may be significant problems with orienting to the examiner and task materials and distractibility. Further, attention and persistence may vary significantly across tasks with reduced motivation for non-preferred activities. Individuals may also be hypersensitive to sounds and visual stimuli in the environment, display self-stimulatory behaviors, and become preoccupied by oral exploration of items. Difficulties with tasks requiring sequential steps or that have multiple stimuli and **stimulus overselectivity** may also be observed. Overselectivity refers to the tendency of individuals with ASD to focus on a restricted range of available environmental cues, such as focusing on one feature of an object while ignoring other equally important features. For example, a student may respond to extraneous and/or irrelevant details (such as the model of the car in a picture) and fail to pay attention to the more salient and important aspects of stimuli on which the task depends (such as object identification, color identification, and/or object function). Overselectivity will have a significant impact on behavior during both assessment and instructional tasks.

THE ASSESSMENT PROCESS

Assessment is more than the administration and interpretation of test results. In contrast to “testing,” assessment is much broader, being conceptualized as a systematic process for gathering information (or data) for use in making diagnostic, legal, and/or educationally relevant decisions. Data collected during the assessment process generally falls within two main types of procedures: formal and informal.

Formal Assessment Approaches

Simply put, formal assessments are the conventional methods of testing that the majority of people are familiar with, such as tests like the SAT and their other aptitude measures. Formal assessments are generally used to compare a student’s performance in some domain with that of his or her peers. Norm-referenced tests are the most commonly used formal assessment procedure; such tests have specific standards that outline the basis of comparison and administration guidelines, resulting in them also being referred to as **standardized tests**.

The standard of comparison for **norm-referenced tests** is a representative “student body” comprising individuals of the same age, grade-level, gender and/or disability category; comparing one student’s performance to others in a similar category or categories. The development of norm-based standardized tests requires that a representative population of students (the standardization sample) is assessed in order to derive the norms to be used for comparison. While this is a process that is more complex than described herein, it involves ensuring that a large enough number of students are assessed across age and grade levels, racial and ethnic categories, socioeconomic status, and geographical region, among others. Based on this information, data is mathematically computed and summarized through statistical procedures in order to generate a range of standardized scores upon which comparisons can be made.

Standardized scores are converted from raw scores and are then used to interpret the student’s performance; scores are then reported as scaled scores, standard scores, stanines, percentiles, and/or age-equivalents. Standard scores are the most commonly reported type of score, in which the mean (or average) and the standard deviation (a measure of variation) have been assigned preset values, typically with a mean of 100 and the standard deviation at 15. Percentiles allow performance to be compared to other students by ranking performance within a range of 1 to 99, with the 50th percentile indicating the median (or middle) score. A percentile rank reflects the percentage of students who scored as well as or lower than the student being tested. As an example, a percentile score of 82 indicates that the student’s performance exceeded that of 82 percent of the comparison group.

In addition, the standardization procedures for norm-referenced tests also apply to administration of test items, with strict guidelines for implementation. Since these tests are used as comparisons between students, they must be administered under similar circumstances in each instance of test taking. This is a major advantage of standardized tests; because they are so specific with respect to their implementation, they are quite easy to administer. All the materials are provided and are held constant across administrations, both over time and across child, allowing for every administration to be conducted in same manner, thereby increasing reliability of results.

However, this approach is not without its disadvantages. Such measures often do not provide an adequate amount of information in order to fully assess the student's level of achievement with respect to what has and has not been learned, or to reach conclusions regarding whether the student meets the standards set for specific grade levels and/or content areas. Thus, this information is only moderately helpful in describing **present levels of performance** during the IEP process (described in more detail later in the chapter).

Also included under formal assessment procedures are **criterion-referenced tests** (which are discussed under informal measures as well). In contrast to norm-based assessments, criterion-referenced tests measure a child's performance and compare it to a specific, typically curricular, standard instead of to other students' performance. Criterion-referenced tests occur when individuals are measured against defined (and objective) criteria and are often, but not always, used to establish a person's competence (whether he or she can do something). Essentially, criterion-referenced tests are able to track or measure a student's mastery of specific skills. The main basis of comparison is between students' performance and a specified level of mastery or achievement. Placement tests and state "accountability tests" (such as the Florida Comprehensive Assessment Test or FCAT) are examples of criterion-referenced competency tests that are commercially available and have standardized administration procedures.

Informal Assessment Approaches

Informal assessments are centered on content and individual performance, rather than on comparisons to other students. As such, these approaches do not necessarily require a defined reference group, but rather compare the child's performance to expected skills and abilities as set forth by developmental standards and/or the curriculum. Most informal assessment tools and measures are not standardized and therefore do not provide information about psychometric properties of the assessment (such as reliability and validity). Nonetheless, this approach does have some advantages over standardized tests. Standardized measures generally assess a larger breadth of skills than informal measures; however the skills included in the assessment may be selective rather than comprehensive and there may be relatively few items for each individual skill area. Informal measures tend to focus on subskills within a curriculum or developmental area in much greater depth (representing a smaller range of skills) and much more thoroughly. Therefore, informal measures are often preferred for goal setting and in determining appropriate instructional strategies.

Types and Goals of Informal Assessments

Informal assessments are sometimes referred to as performance-based measures whose main goal is to inform instruction. Since informal assessments make up such a broad range of procedures, there are a number of different types of assessments that fall under this category.

Criterion-referenced assessments are often considered to be an informal assessment procedure as well. In criterion-referenced assessments, specific criterion serve as the standard for what every student is expected to know, and scores are set to allow comparisons to these benchmarks. Thus, an individual's skill mastery is measured and performance is compared to curricular standards, rather than to a

normative group. Criterion-referenced assessments tell us how well students are performing with respect to specific goals or standards, rather than just indicating how their performance compares to a norm group of local or national students. Therefore, in criterion-referenced assessments, it is possible that none (or all) of the examinees will reach a particular goal or performance standard. This approach allows for determination of individual needs and abilities which aid in the selection of areas to target in intervention, allowing instructional goals and approaches to be specifically tailored to a child.

Many informal assessments are **curriculum-based**. As discussed earlier, the standard of comparison for such measures is the curriculum and students are evaluated as to whether or not they have mastered the skills specified in the curriculum. Thus, these measures directly assess “school skills,” which easily translate to instructionally relevant goals and objectives. **Curriculum-based measurement (CBM)** is a type of curriculum-based assessment strategy that differs primarily with respect to the types of skills selected for assessment and the frequency with which assessment takes place. Brief probes (behavior/data sampling) are collected to sample critical target behaviors and are administered frequently; data are then graphed and the results are analyzed. This process of graphing student performance allows for the identification of whether or not adequate progress is being made and/or when changes need to be made to improve the rate of skill acquisition.

Some other informal assessment procedures include inventories and quizzes, work-sample analysis, task analysis, and portfolio assessment. In **work sample analysis**, samples of the student’s work are observed to study responses (both correct and incorrect) in order to shed light on areas of successful performance and those areas in which the student still needs assistance. Errors are often examined in more detail in order to identify error patterns that may suggest where the learning process has broken down for the student. **Task analysis** approaches involve the study of task demands, in which complex tasks are broken into teachable subcomponents or steps. Because of this feature, task analysis is considered to be an instructional technique as much as it is an assessment strategy. The major goal of this strategy is to allow for a direct relation to specifying the instructional sequence for a specific task. A further informal strategy is **portfolio assessment**. A portfolio assessment involves collecting work products that demonstrate improvement over time in the objectives and goals that have been set for the student. This approach is the most common type of alternative assessment used in classrooms today. It is important to keep in mind that the products selected for inclusion in the portfolio should be consistent with the instructional goals for the student.

Final informal assessment approaches consist of dynamic assessment and diagnostic teaching procedures. Dynamic assessment can be conceptualized as a “learning potential” assessment that differs from traditional testing in terms of the nature of the examiner–student relationship and the type and content of feedback offered. In addition, while formal assessment (and other informal assessment approaches) tend to emphasize the *product* of student learning (i.e., the student’s level of performance), in a dynamic assessment, the examiner is interested in both the product and the *process* of student learning. During **dynamic assessment**, the examiner not only gives performance-contingent feedback on the student’s correct and incorrect responses, but also offers instruction in response to student failure aimed at enhancing the student’s achievement. Diagnostic teaching involves very similar concepts and approaches. In this approach, the focus is on interpreting the student’s interactions with the learning environment and involves taking observational notes regarding the way in which the student approaches a task, handles frustration, self-corrects errors, and engages in problem-solving strategies (Carlson et al., 1998). Another way in which diagnostic teaching can be conducted is to present the same task to the student, while systematically altering task requirements, such as presentation or response modes and observing their effects on student performance. In essence, both approaches involve the systematic manipulation of the testing and/or instructional conditions to determine the most appropriate strategy for teaching a particular skill to a given student; performance

is assessed under standard instructional conditions, aspects of the task or teaching approach are modified, and performance is assessed again under these modified conditions and compared with previous performance. These strategies offer a clear advantage for instructional programming in that they provide necessary insight that will allow educators to alter how they teach according to the type of conditions under which the student is most likely to be successful.

SPECIAL ASSESSMENT GUIDELINES FOR STUDENTS WITH ASD

A thorough and comprehensive assessment, including both formal and informal assessment procedures, is crucial to understanding and appropriately assisting individuals with ASD. Specifically, assessment of individuals with ASD should provide information as to how the individual's development compares to other children his or her age and the specific symptoms, strengths, and challenges exhibited by the child. Further, changes in the individual's development over time should be documented, including skills mastered, rate of skill acquisition, and the maintenance and generalization of mastered skills. Finally, there should be a clearly articulated plan at the outset for linking assessment results to intervention planning and program monitoring. The above-mentioned assessment goals are best accomplished by utilizing a process-oriented approach.

A **process-oriented assessment** is based on idea that the assessment process itself represents a feedback mechanism or a circular process, whereby some portion of the system's output is returned (or fed back) to the input system. An overview of a process-oriented assessment for students with ASD is presented in Figure 2.2.

The aim of a process-oriented assessment is to measure the student's learning and performance over time, allowing data to continually guide goal setting and programming. As such, this approach is particularly well suited for data collection and evaluation that will be ongoing in nature. A major assumption of this approach is that instruction is most effective when it is based on (a) identification of objectives that match student strengths, weakness, and learning styles; (b) instruction that matches clearly defined and measurable objectives; (c) continual assessment of the student's performance relative to objectives; and (d) adjustments to goal selection, instructional programming, and teaching strategies based on feedback on student performance.

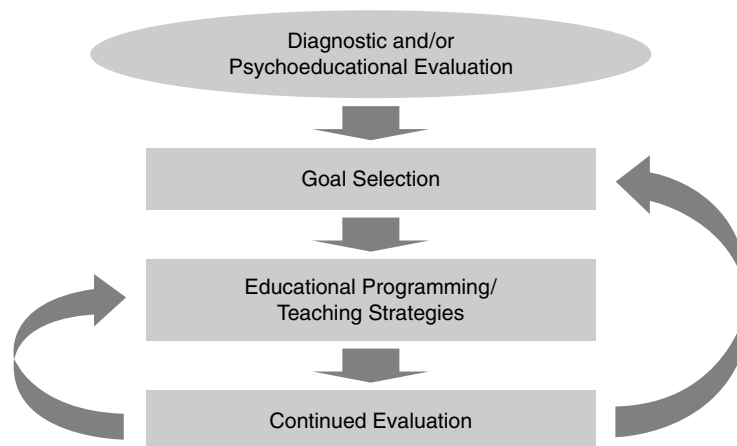


FIGURE 2.2 Process-Oriented Assessment Approach for Students with ASD

Further, best practice assessment guidelines for individuals with ASD have been published, emphasizing four general themes (Klin, Saulnier, Tsatsanis, & Volkmar, 2005; Ozonoff, Goodlin-Jones, & Solomon, 2005). First, assessment must utilize a developmental perspective. Using a developmental framework provides a benchmark for understanding the severity or quality of delays or deviance. Delays in one developmental area can significantly impact the acquisition of later developmental milestones. In addition, whenever possible, assessments of ASD should be multidisciplinary, including a range of professionals with specific perspectives and areas of expertise (such as psychologists, speech and language pathologists, psychiatrists, neurologists and other medical specialists, educational specialists, and/or social workers).

Further, information should be collected from multiple sources, across multiple contexts/settings, and utilizing multiple strategies. Sources include interactions with the individual with ASD; their parents, teachers, therapists, and service providers; and their siblings and/or peers. Settings for assessment include not only the evaluation room, but home, school, and/or community settings as well. There are many important reasons to collect assessment data across multiple settings. First, symptoms of ASD are often dependent on characteristics of the environment (e.g., situation-specific). Therefore, the child may demonstrate more adaptive and functional skills within a one-to-one testing situation, but have much more difficulty in less structured settings, such as with peers on a playground or in a distracting classroom situation. In contrast, due to difficulties with adapting to changes in routines and environments, along with generalization difficulties, structured one-to-one evaluation sessions may fail to capture the full range of skills that the individual possesses. Therefore, the child may look much more competent in a known environment (such as the classroom) than in an evaluation room without familiar, well-practiced routines and materials. Assessment must also utilize a wide range of strategies and assessment procedures, including observations, administration of formal standardized and informal curriculum-based assessments, and completion of ratings scales and inventories by individuals familiar with the child's day-to-day functioning, such as parents and teachers.

Finally, and perhaps most importantly, decisions regarding assessment methods and approaches to be used need to be individualized based on the child's age, developmental level, specific diagnosis, and areas of need. Necessary components include a review of available records, including anecdotal reports, work samples, behavioral charting systems, report cards, previous diagnostic evaluations, and **Individualized Education Programs (IEPs)**. Additional information can be obtained through parental interviews regarding the child's developmental, educational, and medical histories, as well as by conducting observations across multiple settings.

Types and Goals of Formal Assessment of Individuals with ASD

Formal assessments generally involve both **diagnostic** as well as **psychoeducational** components. Guidelines for goals within each type of assessment, specific to individuals with ASD, are offered.



BOX 2.2 Research Notes # 1

With the increased interest in early identification and the belief that early intervention for ASD will lead to more optimal outcomes, researchers have begun to focus on studying the long-term outcomes of young children with ASD who have participated in specialized early intervention services. Turner and colleagues followed 26 children (22 male, 4 female) who received clinical diagnoses of either autism ($n = 18$) or PDD-NOS ($n = 8$) under the age of 3 and evaluated them 5–7 years after their initial evaluations.

Results indicated considerable improvement in cognitive scores for a large number of children in the sample, compared with initial cognitive scores at age 3. At age 3, 84% of the children had cognitive scores below the threshold for intellectual disability (less than 70), which decreased to only 28% of children by follow-up (mean age = 7.9 years). In addition, at follow-up, 72% of children obtained scores in the borderline to average ranges in comparison to only 16% at age 3. Further, and most encouragingly, 56% of the children were scoring in the average range or above at follow-up.

Results from this study are important because they suggest that cognitive scores may change dramatically between the ages of 2 and 9 for students with ASD. Cognitive scores increased for most children, with 68% of scores rising at least 15 points. Findings indicated that, on average, cognitive scores at outcome increased 23 points, and nine children increased more than 30 points. Higher initial cognitive scores appeared to be more stable than lower scores, as all four children who attained cognitive scores above 70 at age 2 obtained average scores at age 9. Results further revealed that there were some initial characteristics of children that were associated with better outcomes at follow-up. Children with better outcomes tended to have a younger age of diagnosis, higher initial development quotient and language scores, and received more hours of speech and language therapy services.

Source: Information from Turner, L. M., Stone, W. L., Pozdol, S. L., & Coonrod, E. E. (2006). Follow-up of children with autism spectrum disorders from age 2 to age 9. *Autism, 10*, 243–265.

DIAGNOSTIC ASSESSMENT **Diagnostic assessment** for ASD is typically the first formal assessment process that a family will undergo. The overall goal of such an assessment is to obtain an initial diagnosis, through consideration of other disorders with similar presenting problems and symptoms. Through the diagnostic evaluation, clinicians seek to determine whether the child's behavioral difficulties are consistent with a diagnosis with the autism spectrum, or rather, can be better explained by another disorder such as an intellectual disability/mental retardation or a language disorder. The process of receiving a diagnosis or label is important for a number of reasons. Most importantly, accurate diagnosis facilitates the selection of additional assessment components, as well as identification of appropriate intervention approaches. Further, symptom presentation is often related to other domains of interest, including cognitive abilities, joint attention, language, and social development. Early diagnosis also has far-reaching implications for prognosis and family adjustment. Early identification allows for early entry into intervention as well as assisting families in understanding their child's difficulties. Diagnosis is the first step in providing families with the tools they will need to advocate for services for their child and become active participants in their child's intervention.

Documentation of diagnostic status is often necessary for access to services or funding mechanisms. Accurate classification is important from an educational standpoint in that it is used to determine eligibility for school-based special educational placement and related services. State and federally funding social service and health care agencies also rely on diagnostic reports in order to document eligibility for services.

Finally, diagnostic evaluations offer a basis from which to prescribe or plan interventions, by specifying child characteristics across core and associated impairment areas in ASD, such as specific deficits and skills in the areas of social, communication, and play skills as well as restricted, repetitive, and stereotyped behaviors and sensory processing disturbances that may interfere with instruction. Such information, collected during the initial evaluations stage, can also be important in documenting progress and evaluating intervention efforts. In this regard, it is equally important that interventions consider goals for outcomes that reflect areas that are relevant to symptom presentation.

PSYCHOEDUCATIONAL EVALUATION **Psychoeducational evaluation** should also be incorporated into the initial assessment stages, as the emphasis of this approach is to gather information

across multiple domains of functioning that can be used to guide educational programming. The major goal of a psychoeducational evaluation is to obtain a better understanding of the student's strengths and weaknesses in order to provide a baseline of skills from which to plan intervention (Klin, et al., 2005). Ultimately, this information will be used to create an individualized education program (IEP) that takes into account developmental level, strengths and needs, likes and dislikes, behavioral difficulties, effective teaching strategies, and motivational systems. Information relevant for program evaluation can be provided through the psychoeducational process and can be complemented with consistent application of informal assessment strategies during instruction. Such informal procedures allow for documentation of progress toward goals over time through continued evaluation of a child's characteristics (learning readiness, academic strengths and weaknesses) with frequent comparisons between current and previous functioning.

A "Best Practices" Assessment Battery for ASD

Best practices in the assessment of ASD specify that an adequate assessment must lead to an appropriate intervention plan (Perry, Condillac, & Freeman 2002). Therefore, it will be important to use guidelines for priority areas for intervention in ASD as a basis for the evaluation, in order to ensure that all important areas are assessed. According to recommendations put for by the National Research Council (NRC, 2001), areas that should be prioritized in intervention programs for students with ASD include language and communication development, social and play skills, fine and gross motor development, development of cognitive and functional academic skills, and skills needed for success in a regular classroom, including flexibility, organization, and engagement in the learning process. An overview of Best Practices in the assessment of individuals with ASD is presented in Figure 2.3.

- Maintain a developmental approach.
 - Using a developmental framework provides a benchmark for understanding the quality and/or severity of areas of delay and/or deviance.
- Assessment of ASD should be multidisciplinary.
 - Whenever possible, professionals from multiple disciplines should be part of the evaluation process, including psychology, psychiatry, speech and language, occupational therapy, and other medical disciplines (audiology, neurology, pediatrics).
- Assessment should include information from multiple sources and settings.
 - Symptoms of ASD are often dependent on the characteristics of the environment and performance is often dependent on these environmental task demands.
- Assessment methods should be individualized based on age, developmental level, and diagnosis; and areas of need and should include, at a minimum:
 - A review of records
 - A family interview regarding developmental and medical history
 - Natural and structured observations in multiple settings
 - Standardized and informal tools

FIGURE 2.3 Guidelines for a Best Practices Assessment of Autism Spectrum Disorders

Sources: Information adapted from Klin, A., Saulnier, C., Tsatsanis, K., & Volkmar, F. R. (2005). Clinical evaluation in autism spectrum disorders: Psychological assessment within a transdisciplinary framework. In F.R. Volkmar, R. Paul, A. Klin & D. Cohen (Eds.), *Handbook of Autism and Pervasive Developmental Disorders, 3rd ed., Vol II* (pp. 863–881). Hoboken, NJ: John Wiley & Sons; and Ozonoff et al. (2005). Evidence-based assessment of autism spectrum disorders in children and adolescents. *Journal of Clinical Child and Adolescent Psychiatry, 34*, 523–540.

COMPONENTS OF A CORE ASSESSMENT BATTERY

Klin et al. (2005) offer that “developmentally based assessment of cognitive, social communicative and adaptive skills provides the essential bases on which decisions on diagnosis, eligibility for services, and program planning have to be made” (p. 772). Elements of a core assessment battery include those domains that are both necessary and sufficient for an evaluation of a suspected ASD, and are typically included as part of the diagnostic evaluation. These core domains include developmental and/or intellectual assessment of cognitive abilities, speech and language skills, and adaptive behavior functioning. Figure 2.4 provides a recommended evidence-based assessment battery for students with ASD.

Cognitive/Intellectual Assessment

Cognitive/intellectual assessment is necessary for the evaluation of individuals suspected of meeting criteria for ASD and for differentiating between individuals with ASD and those with a primary diagnosis of mental retardation/intellectual disability. Thus, intellectual assessment allows for the differential diagnosis of conditions that may affect language and cognitive development, including ASD, general developmental delay, intellectual disability, and language disorders. Cognitive assessment is also necessary because many diagnostic assessment measures for ASD require that behaviors

Core Assessment Battery—Necessary assessment domains for diagnosis and eligibility determination, as well as preliminary planning of priority instructional needs.

- Assessment of *specific symptoms of autism* using a variety of autism diagnostic measures, combined with parent interview
- Assessment of *intellectual functioning* to allow clinicians to frame the interpretation of other evaluation results
- Assessment of *language*, including receptive, expressive, and pragmatic language abilities
- *Adaptive behavior* assessment in order to rule out co-occurring intellectual disability/mental retardation as well as setting appropriate goals in treatment planning. This domain should include self-help, recreational/leisure and community-based skills

Additional Assessment Domains—Additional assessment domains that will provide information about additional priority educational needs to guide IEP development

- *Neuropsychological assessments* including attention and executive functioning, memory, and processing
- *Developmental, pre-academic and academic functioning* in order to identify patterns of strengths and weaknesses in the student’s individual learning profile
- *Prevocational and vocational skills* for students approaching transition-age to plan for post-school activities and outcomes
- *Emotional functioning* to assess comorbid anxiety and depression that may need to be targeted
- *Motor skills and sensory processing* to set appropriate instructional objectives, supports, and accommodations
- *Reinforcement assessment* in order to determine effective learning and behavioral supports
- *School, family, and community contexts* because the goal of assessment should be to understand how ASD affects individuals in the course of daily life

FIGURE 2.4 A Recommended Evidence-Based Assessment Battery for Students with ASD

Source: Information from Ozonoff et al. (2005) and Klin et al. (2005)

be interpreted against the child’s developmental level; without a measure of intellectual ability, it is often very difficult to ascertain whether a given behavior is appropriate for the child’s level of development and skills. Further, intellectual ability is one of the best predictors of long-term prognosis for individuals with ASD, and therefore can be used to provide family members with preliminary information regarding the child’s expected developmental trajectory.

The inclusion of standardized intelligence tests is especially important given prevailing misconceptions (or “myths”) regarding the measurement of cognitive abilities in individuals with ASD. Such “myths” include the idea that measurement of IQ is irrelevant for individuals with autism; many erroneously believe that because of motivational difficulties, individuals with ASD are often “untestable” on standardized tests and therefore, it is not possible to accurately measure their cognitive abilities. This assumption results in the viewpoints that it is not possible to know the true intellectual capabilities of someone with ASD and/or that all individuals with ASD are actually quite intelligent, but do not demonstrate the skills they have due to problems with motivation and attention.



BOX 2.3 Research Notes # 2

“Despite the general agreement that cognitive ability is a critical component of treatment research in addition to the clinical need for IQ information, there is no consensus about the most appropriate test instrument(s) to measure cognitive functioning in this population” (Delmolino, 2006, p. 959). So, a study was conducted to assess the usefulness of the PEP-R as a measure of general cognitive development in young children with autism. Participants consisted of 27 children with autism or PDD-NOS (23 boys and 4 girls) with a mean age of 44 months (3.8 years) at the time of testing.

In order to answer this question, Delmolino administered the PEP-R along with a standardized intelligence test (the Stanford-Binet Intelligence Scales—Fourth Edition) and compared the scores. Findings of the current study indicate that the PEP-R is an instrument that is correlated significantly with estimates of cognitive functioning obtained with the SB-FE. Correlations between the DQ scores obtained on the PEP-R and the Composite IQ score on the SB-FE were .73, indicating a high degree of consistency in scores across the 2 measures.

Further, Delmonico offered that the PEP-R has “some potential advantages for testing this population including flexibility, range of appealing materials, lack of timed items, and separation of language items from general assessment items that are not dependent on language and its utility for educational programming” (p. 962). These findings suggest that developmental assessment instruments, such as the PEP-R, can be useful tools to use when estimating cognitive functioning of children with autism, in addition to serving a role in educational programming.

Source: Information from Delmolino, L. M. (2006). Brief report: Use of DQ for estimating cognitive ability in young children with autism. *Journal of Autism and Developmental Disorders*, 36, 959–963.

Speech and Language Assessment

Speech and language assessment is the second critical area to include in a core assessment battery for the diagnosis of ASD. As with intellectual ability, understanding of the child’s language abilities, particularly when compared against their cognitive abilities, is important for the differential diagnosis process (specifying the most appropriate diagnosis). Further, language abilities are also important indicators of prognosis. Research suggests that individuals with the best prognosis for outcome are those who, by the age 5, have developed the spontaneous and communicative use of language and the ability to speak in phrases.

Assessment of Adaptive Behavior

Assessment of adaptive behavior serves as the final core assessment battery component, as it is also important for the differential diagnosis of ASD from intellectual disability/mental retardation (ID/MR). Adaptive behavior refers to “real life” skills that are necessary for people to live independently and to function safely and appropriately in daily life, including skills such as self-care, socialization, communication, safety, food preparation, ability to follow community rules, money management, shopping, and cleaning. By definition, individuals with ID/MR must exhibit deficits in adaptive behavior in addition to impaired intellectual functioning (APA; *DSM-IV-TR*). In addition to differential diagnosis, ASD can co-occur (or be comorbid) with ID/MR. Adaptive behavior assessment is critical to diagnosing the presence of both conditions, if appropriate. Further, adaptive behavior is important to include in diagnostic evaluations because such measures give a more comprehensive picture of the students’ various capabilities and weaknesses than measures of IQ alone. Functional skills that should be the focus in instructional programs can also be revealed through this approach.

COGNITIVE ASSESSMENT

Developmental and Intelligence Tests

According to the practice parameters for the screening and diagnosis of ASD, “knowing the child’s cognitive status is important in determining his overall level of functioning. This is, in turn, important when trying to establish a discrepancy between the child’s level of social function and the overall cognitive and adaptive function, a key criterion in the diagnosis of autism” (Filipek et al, 1999, p. 462). As mentioned previously, intellectual functioning is generally considered as a predictor of outcome; however, it should be recognized that the predictive validity of such scores is not necessarily high. Research has indicated that there may be relatively low stability in IQ scores for children with ASD, with a significant proportion of children exhibiting changes in cognitive functioning over time (Sigman & Ruskin, 1999; Turner et al., 2006). Scores are relatively less stable, and reliable, the younger the child is at the time of administration of the intelligence test. For a list of commonly used measures of intelligence for students with ASD, refer to Table 2.2.

Recommendations for test selection include choosing measures that (a) are appropriate for both the child’s chronological age and estimated mental age; (b) provide a full range (in the lower direction) of raw to standard scores conversions for the child’s chronological age; (c) sample both verbal and nonverbal intellectual skills; and (d) measure and score verbal and nonverbal skills separately from one another.

In addition to the above specifications, it is often useful for tests to also have visually interesting materials and allow for subtests to be administered in flexible, rather than fixed, sequence. Some assessment instruments may be more useful than others in maintaining a child’s interest, tapping into strengths as well as weaknesses, gathering information about learning style, and generating meaningful (e.g., valid and reliable) test scores. With respect to the latter, it is critical to consider both floor and ceiling effects when selecting measures. The majority of assessment tests organize test items in a sequential manner, with easier/earlier occurring skills preceding more difficult ones. However, due to the uneven developmental profile observed in many children with ASD, this approach may not accurately reflect the full range of skills the child possesses. For example, due to language difficulties, a child may reach the **ceiling** (the item in which administration of a subtest ceases due to a series of incorrect responses) on a certain test item, but be able to pass visual-spatial and memory tasks at a higher level.

Therefore, it is recommended that the following aspects of instruments be evaluated when attempting to select an appropriate measure for a particular child: the range of easy to difficult items, the number of items at each difficulty level, the normative age range and raw to standard score conversion charts, whether the test provides “out of level” norms, the manner in which test items are

TABLE 2.2 Recommended Measures for the Assessment of Intellectual Assessment for Individuals with ASD

Measure	Test	Publisher & Date	Type	Scores	Skills Measured	Age Range
Developmental Assessment	<i>BRIGANCE (ED-II)</i>	Curriculum Associates, 2005	Standardized/ Norm-referenced; Criterion-referenced	Quotients; Percentiles; Age-equivalents	<ul style="list-style-type: none"> • Motor • Language • Academic/Cognitive • Daily Living • Social-emotional 	Birth to 7 years
	<i>Battelle Developmental Inventory-2 (BDI-2)</i>	Riverside, 2004	Standardized/ Norm-referenced	Standard and Scaled scores; Percentiles; Age-equivalents	<ul style="list-style-type: none"> • Communication • Adaptive • Personal-Social • Motor • Cognitive 	Birth to 7.11 years
	<i>PEP-III</i>	WPS, 2005	Standardized/ Norm-referenced	Developmental Quotient (DQ); Composite scores; Age-equivalents	<ul style="list-style-type: none"> • Fine motor • Gross motor • Visual reception 	6 months to 7 years
	<i>Mullen</i>	Pearson, 1995	Standardized/ Norm-referenced	Early Learning Composite (DQ); Domain T-scores; Percentiles; Age-equivalents	<ul style="list-style-type: none"> • Communication Composite • Motor Composite • Maladaptive Behavior Composite • Expressive Language 	Birth to 68 months
Intellectual/Cognitive Assessment	<i>K-ABC-II</i>	Pearson, 2004	Standardized	IQ and Subtest Standard and Scaled scores; Percentiles; Age-equivalents	<ul style="list-style-type: none"> • Mental Processing (Full Scale IQ) • Nonverbal IQ • Simultaneous Processing • Sequential Processing • Planning • Learning 	3.0 years to 18.0 years

<i>SB-5</i>	Riverside, 2003	Standardized	IQ and Subtest Standard and Scaled scores; Percentiles	<ul style="list-style-type: none"> • Full Scale IQ • Verbal IQ • Nonverbal IQ • Fluid Reasoning • Knowledge • Quantitative Reasoning • Visual-Spatial Processing • Working Memory 	2.0 years to 85 years
<i>WPPSI-III</i>	PsychCorp, 2002	Standardized	IQ and Subtest Standard and Scaled scores; Percentiles	<ul style="list-style-type: none"> • Full Scale IQ • Verbal IQ • Performance IQ 	2.6 years to 7.3 years
<i>WISC-IV</i>	PsychCorp, 2003	Standardized	IQ and Subtest Standard and Scaled scores; Percentiles	<ul style="list-style-type: none"> • Full Scale IQ & Index Scores: • Verbal Comprehension • Perceptual Reasoning • Processing Speed • Working Memory 	6.0 years to 16.11 years
<i>Leiter-R</i>	Stoelting, 1997	Standardized	Standard and Scaled scores for domains; Percentiles	<ul style="list-style-type: none"> • Nonverbal IQ assesses matching, concept formation, and reasoning 	2 years to 20.11 years

Source: Information from Klin et al., (2005) and Ozonoff et al., (2005)

presented to the child (verbally, visually, with demonstration or modeling etc.) and/or the presence of “practice” or “teaching” items. Further, to obtain the most useful results, it is also recommended that clinicians choose measures that minimize language demands and/or assess nonverbal problem solving independently from verbal skills, have a “backup” instrument readily accessible to allow for switching tests depending on the child’s ability level and/or interests, and consider administering subtests from different instruments to get a more thorough picture of ability level.

With these suggestions in mind, appropriate and widely used developmental tests, including those for younger, and/or less verbal individuals with ASD, are listed in Table 2.4 and described in detail below. Because educators are less likely to administer and interpret the results of intelligence (IQ) tests, only brief details regarding the most commonly used tests are provided.

Developmental Assessments

Developmental assessments are similar to intelligence tests, but are typically intended for infants through early school-age students. Like IQ tests, developmental assessment measures are usually norm-referenced standardized assessments. However, because they are intended for a younger age group, the types of skills measured are often different from those included on IQ tests. The types of skills assessed on developmental measures relate easily to the domains frequently targeted in preschool and early elementary school, such as fine motor skills, vocabulary, preacademic concepts (color and shape identification, matching, sorting, classification/categorization) and academic skills (counting, one-to-one correspondence, number and letter identification, sight word identification, etc.). Thus, these batteries are especially well-suited for use by educators and school psychologists alike.

On developmental measures, the child’s current abilities are compared to the expected scope and sequence of skill acquisition in typically developing students, and a developmental quotient (DQ) norm-based score is derived. This DQ provides an estimate of cognitive functioning; however, “the concept of IQ is avoided in young children because of the close interdependence of cognitive functioning with other domains of development” (Klin et al., 2005, p. 790). Nonetheless, developmental quotient scores and IQ scores are **correlated** with one another (Delmolino, 2006).

ADDITIONAL COMPONENTS OF AN ASSESSMENT BATTERY FOR ASD

In addition to the core assessment components, evaluation of students with ASD may benefit from inclusion of other measures and domains that can serve to enhance understanding of the student’s strengths and difficulties, as well as approach to problem-solving and learning style. Inclusion of these measures is consistent with a process-oriented assessment approach that is focused on understanding how the child learns, rather than what the child has learned.

A major assessment area in this approach includes **information processing**, which can include some or all of the following areas:

- ***Auditory/Phonological Processing***, including auditory memory, letter-sound correspondence, phonemic discrimination and segmentation, and the synthesis of sounds into words. These abilities underlie fundamental reading processes and can indicate when the student may have difficulty with the attainment of literacy skills.
- ***Visual Processing and Visual-Motor Integration***, including visual discrimination, spatial awareness, eye-hand coordination, and ability to translate visual perception into motor functioning (which involves motor control, accuracy, and coordination as well as psychomotor speed). These abilities typically underlie successful performance in academic areas such as mathematics and writing.

- **Memory and Learning** processes are critical for adequate functioning in school and daily life. Memory refers to the encoding, storage, and retrieval of information. The types of memory systems that appear to be most important, and which may be the focus of assessment, include short-term memory, working memory, and long-term memory and retrieval. Such assessment tasks generally repeat the same information and/or stimuli over a number of times to assess the efficiency and accuracy of storage and retrieval of new information. These tests can provide insight into the manner in which the individual is likely to learn best and the ease with which they are likely to learn new tasks. A process-oriented approach to learning and memory tasks is critical as it will reveal important information about the strategies that the individual is using to complete the task; dynamic assessment approaches may be especially useful in highlighting additional strategies that may improve performance and thus enhance efficiency of learning.
- **Attention and Executive Functions** include the areas of sustained and selective attention, initiation and inhibition, planning and organization, problem solving, self-monitoring, and cognitive flexibility. Research has consistently indicated that individuals with ASD often have a pattern of executive functioning impairments including selective focus on irrelevant details, initiation and planning difficulties, and the ability to be flexible in problem-solving strategies and behavior. Since attention and executive functioning are critical to school (and workplace) success, they should be a focus of both assessment and intervention efforts.

Research with individuals with ASD has consistently demonstrated specific information-processing profiles, including relatively good performance on tasks that rely on rote, mechanical, or perceptual processes, and impaired performance on tasks requiring higher-order conceptual processes, reasoning, interpretation, integration, or abstraction (Minschew & Goldstein, 1998 as cited in Ozonoff et al., 2005).

In addition, other areas that may impact behavior and instructional planning include sensory processing (including under- and oversensitivities to specific stimuli including sounds, lighting, touch, temperature, etc.), emotional and behavioral functioning (including interfering or challenging behaviors and emotional issues such as anxiety and/or depression), preference assessments (including information about what the child will “work” to obtain). These should be included in the assessment process when relevant.

Assessment Strategies for Individuals with ASD

Due to learning challenges outlined earlier in the chapter, children with ASD may present particular challenges during assessment that may make generating meaningful estimates of performance on standardized tests difficult. Such children are often colloquially referred to as “untestable.” However, Ozonoff and colleagues believe that “untestability” primarily reflects a lack of availability of appropriate tests and/or clinician experience; “when experienced clinicians evaluate children with autism, few should be untestable” (Ozonoff et al., 2005, p. 529).

While the focus of the chapter thus far has been primarily on standardized assessment procedures and instruments, it is important to keep in mind the overarching purpose of assessment—namely, to provide information that will be useful for program planning. Therefore, while standardized, norm-based scores are important for documenting eligibility for special education services and revealing areas of educational priority, scores do not “tell the whole picture.” In fact, for some children, the obtained “scores will hardly convey the most important information to the special educators whose mission is to address the child’s needs while capitalizing on their strengths” (Klin et al., 2005, p. 791). Therefore, no child is truly “untestable.” Even if scores generated are not considered to be a valid reflection of the child’s overall skills, useful information can still be obtained. The likelihood of the latter is significantly

increased when the assessment process includes effective use of behavioral observations and the provision of **adaptations** to evaluation procedures.

Clinicians have an ethical obligation to make such adaptations when working with special populations, both in instruction as well as in assessment. Adaptations will inform instructional planning by providing the most accurate possible estimate of the child's abilities in the constructs of interest, by minimizing the impact of test-taker attributes. In addition, the inclusion of adaptations to test procedures during the assessment process provides some ecological (or "face") validity to parents that the child was given every opportunity to demonstrate the skill in question. Further, all of the strategies provided below are applicable for use during instructional tasks. Adaptations provided during assessment (whether formal or informal) and their subsequent effect on the student's performance directly relate to the process of developing an IEP. Adaptations allow for "testing the limits" and provide more valid information regarding what the student knows, providing a more accurate picture of the child's present level of performance. In addition, by trying out different strategies, educators are armed with more complete knowledge regarding potential accommodations to include in the IEP.

ADAPTATIONS FOR TESTING DIFFICULT TO TEST CHILDREN Suggestions for testing difficult to test children include (a) selecting appropriate measures; (b) presenting detailed descriptions of behavioral observations during the assessment procedures; (c) utilizing environmental supports and reinforcement strategies; and (d) altering or making **modifications** to standardization procedures.

Behavioral observations during testing often provide critical information regarding preferred types of tasks, task persistence and frustration level, attention to details, instructions and materials, attention span across preferred and non-preferred tasks, length of time the child will attend and work before becoming disengaged, and approach to problem solving (i.e., trial and error, deliberation, etc.). In addition, useful information can be obtained regarding strategies that increase cooperation and performance.

Environmental supports and reinforcement strategies improve cooperation and performance during the testing situation by making adjustments to the testing environment, in order to increase the child's attention and success on tasks. Such approaches inform instruction by systematically assessing the level and type of environmental structure needed for task completion and social engagement. The first step in this process involves creating a comfortable testing environment by conducting the evaluation in a child-friendly environment with familiar adults present and/or in familiar locations (e.g., the classroom rather than the clinician's office). Testing can be completed with the child standing near the table, seated on a familiar person's lap (for younger children), and/or on the floor if needed. It is also helpful, if space allows, to create clearly identified "work" and "play/break" areas.

Visual strategies are also an effective addition to the testing session and may include a "first-then" or "work-play" visual schedule, the use of work systems (e.g., "finished basket") to demonstrate task completion, and visual, token, or word schedules to communicate the number and type of tasks to be completed. Visual cues for requests (e.g., a "break" card, reinforcer choice boards, and/or token or penny boards) can also help less verbal students to signal the need for a break and to increase motivation for task completion.

With respect to reinforcement, there are three main goals for the use of reinforcers during testing: (a) to improve task compliance and effort by increasing motivation, (b) to assist in the identification of functional reinforcers for the child that can be incorporated into his or her instructional program, and (c) to assess for preferred stimuli, any self-stimulatory behaviors, preoccupations, and circumscribed interests. Some strategies and guidelines for using reinforcers during testing include asking the child's parent and/or teacher about preferred and non-preferred stimuli and having them bring preferred snacks and favorite toys or materials to the testing session, trying out a full range of different reinforcers to assess their value, varying reinforcers throughout the session to prevent satiation, assessing the schedule of reinforcement that results in optimal performance, evaluating the

child's response to social praise as a reinforcer, using planned ignoring for minor disruptive behavior, and considering using escape from tasks or "work" as a reinforcer.

In contrast to the above mentioned adaptations, breaking standardization during testing is typically done through making modifications to the test procedures.



BOX 2.4 Trends and Issues # 2

When, Why, and How to Break Standardization Procedures

Perry and colleagues (2002) provide some thoughts and guidelines related to the issue of "breaking standardization," along with a number of useful testing strategies. According to the authors, making adaptations when required for persons from special populations is ethically responsible practice in order to reduce the effect of characteristics of the test-taker that are not relevant to the construct being tested and/or the primary focus of the assessment. Such adaptations may include presentation or response formatting changes, modifications to timing or the testing environment, using portions of tests, or using substitution tests.

It is important to keep in mind that such adaptations and modifications will invalidate the scores obtained. However, this problem can be minimized by first administering the tests under standardized conditions and then making modifications in order to "test the limits" and provide qualitative information regarding the student's performance. In such a case, scores would be reported based on the standardized administration. In addition, behavioral observations would then be provided regarding (a) what modifications were made and (b) how these adaptations influenced performance. Some possible modifications are offered:

1. Be flexible in the order of presentation of subtests and subtest items:
 - Administer subscales in a different order to maximize cooperation.
 - Begin with a task that you know the child likes (puzzles).
 - Intersperse easy and more difficult items (behavioral momentum).
 - Present tasks so that stressful language items are balanced by more enjoyable visual motor tasks.
 - Start at the beginning of a particular subscale (easiest item) rather than the age-suggested start point.
 - Repeat tasks the person enjoyed following some frustrating task, prior to a break.
2. Change the manner in which instructions are given:
 - Use a multiple-choice or fill-in-the-blank format rather than an open-ended style.
 - Paraphrase instructions and/or simplify language to match the child's language level.
 - Use phrases that are more familiar to the child (e.g., "match" vs. "find me another one just like this").
 - Use generic verbal prompts. For example, for a picture vocabulary task, we may ask: "What is this? This is a _____."
 - Use visual supports to aid in the comprehension of instructions.
3. Modify the response and presentation formats:
 - Allow untimed responses.
 - Allow different modes of responding, including nonverbal (pointing, gestures), etc.
 - Administer task with different materials, which may be more familiar, motivating, or interesting.
 - Administer items in naturalistic settings and/or on another day.
 - Use dynamic assessment/diagnostic teaching approaches (teach the task).

Source: Information from Perry, Condillac, & Freeman (2002). Best practices and practical strategies in the assessment and diagnosis of autism. *Journal on Developmental Disabilities*, 9, 61–75.

Such strategies significantly alter the task demands and/or the construct being measured. However, this approach can be useful in gathering information about optimal levels of performance and useful instructional approaches for the child and relies on the informal assessment procedures referred to as diagnostic teaching and dynamic assessment. Areas of “emerging” skills and evaluation of specific instructional strategies and approaches can be highlighted that will prove useful in guiding instructional programming and IEP development.

Linking Assessment to Intervention

Once the data is collected and the evaluation is completed, the assessment results must be linked to instructional programming. The NRC (2001) guidelines for necessary components of interventions for ASD provide a good starting place for creating an instructional plan for a student with ASD (see Box 2.5). The NRC (2001) recommendations for preschool children with ASD specified that children be enrolled in early intervention programs as soon as an ASD is seriously considered. In addition, active engagement in intensive instructional programming (a minimum of a full school day, at least 5 days a week – 25 hours a week) for the full year was considered essential. Further, the



BOX 2.5 Trends and Issues # 1

Guidelines for Selecting Appropriate Educational Objectives for Children with ASD

Appropriate objectives should be observable, measurable behaviors that can be reasonably accomplished within a 1-year time frame. In addition, these objectives should have a direct impact on enhancing the child’s ability to participate fully in education, the community, and family life. The following areas should be targeted for development:

- **Social skills** that will enhance participation in family, school, and community activities. Suggestions for target areas include imitation skills, responding to and initiating interactions with peers and adults, and parallel and interactive play skills with peers and siblings.
- **Language and nonverbal communication skills** including expressive (verbal) language, receptive language, and use of eye contact and gestures to communicate with others.
- **Development of a functional and symbolic communication system** that should emphasize identifying a system that allows children to communicate their wants and needs, and to make choices that affect them, to the greatest extent possible.
- **Fine and gross motor skills** that will assist in achieving age-appropriate functional activities.
- **Cognitive skills** including the development of basic concepts, life skills, symbolic play, and academics. Goals for cognitive development should be carried out in the context in which the skills are expected to be used and functional academic skills should be taught when appropriate.
- **Behavioral goals** that are focused on skill development (communication skills, self-regulation skills, etc.) to replace more challenging and/or problematic behaviors. Behavioral strategies should be positive and proactive, incorporate information about the contexts in which the behaviors occur, and include a range of behavioral techniques that have empirical support.
- **Independent organizational and self-help skills** that underlie successful participation in the home, school, and broader community (independent task completion, asking for assistance, following directions and instructions, etc.).

Source: Information from: National Research Council (2001). Conclusions and Recommendations. *Educating Children with Autism*. Washington DC: National Academy Press.

educational environment should allow for repeated teaching of instructional goals around short intervals with one-to-one and small group instruction. The importance of specifying mechanisms for ongoing evaluation of the program and the child's progress, with adjustments made accordingly, was also stressed.

DEVELOPMENT OF THE INDIVIDUALIZED EDUCATION PROGRAM (IEP)

The assessment process leads directly to the development of an IEP for the student. The IEP is a written document that describes the special education and related services to be provided in order to meet the specific needs of a child with a disability, and is comprised of six required parts:

1. **Description of the child's present level of performance, or functioning:** The first step in developing an IEP involves a description of the child as he or she is at the present time. This section of the IEP highlights the child's current academic and behavioral skills, interests, and learning style, and discusses the implications of the child's disability on academic and non-academic (e.g., social, communication) achievement. From this description, the IEP team develops a list of areas of instructional priority, often referred to as priority educational needs (PENS). Since instructional programming is based on information regarding a student's present levels of performance, learning style, and preferences, and identification of PENS, the assessment process and its resulting data are critical to successful instructional planning.
2. **Annual goals and objectives:** Goals and objectives are based upon the information described above, namely descriptions of the child's present level of performance and identification of priority educational needs. Goals and objectives are descriptions of the skills that the child will attain within a specified period of time. Goals are typically written to reflect annual expectations for progress, whereas objectives typically reflect short-term steps (often quarterly) toward the attainment of the annual goal. Goals and objectives should take into account the above referenced NRC (2001) recommendations for programming for students with ASD, and target each identified area of priority educational need.
3. **Related services:** The IEP also describes services that will be provided in order to supplement the educational services provided in the classroom. Related services are those services that are necessary in order to effectively implement the IEP and designed to ensure that the child is able to benefit from special education in the least restrictive environment. Examples of possible related services include counseling; occupational, physical, and/or speech and language therapies; parent training; and assistive technology.
4. **Educational placement:** Placement refers to the educational setting in which the IEP will be implemented and is chosen based on the setting in which the goals and objectives will be appropriately met. If the classroom setting is not a general education classroom, the IEP must specify the amount of time (if any) that the child will participate in the general education classroom and include a statement ensuring that the least restrictive environment was considered.
5. **Time and duration of services:** This step in the IEP process specifies starting and ending dates for goals, objectives, and related services. In addition, the frequency of any related service is also specified. For example, the IEP might specify that speech and language therapy will be delivered twice a week for 30 minutes each session for the duration of the IEP. Because special education law (IDEA) requires annual review of services provided in the IEP, long-term duration for services should be projected no further than 1 year.
6. **Evaluation of the IEP:** The final step in IEP development is specifying how student progress toward short-term objectives and annual goals will be measured or evaluated. Following a

process-oriented assessment approach will ensure that this step is not overlooked. In addition, well-written goals and objectives (described below) automatically build in an evaluation process by allowing for growth and development to be tracked.

Creating Annual Goals and Objectives

Annual goals and objectives will be based upon comprehensive assessment data (both formal and informal) and should incorporate the NRC (2001) recommendations referenced in this chapter. Given the challenges associated with ASD, annual goals should address, at minimum, the following areas: social functioning; nonverbal communication skills; receptive, expressive and pragmatic language; fine and/or gross motor skills; academic skills; and behavioral, organizational, and/or self-help skills.

Annual goals should (a) clearly state what the student is expected to accomplish in a 1-year time frame, (b) be worded as a positive statement (what the student *will* accomplish, versus what the student will no longer do), and (c) be worded to be clearly observable and measurable. Well-written IEP goals and objectives tend to follow a specific formula consisting of five questions, which when used, will result in a statement that is objective, observable, and measurable.

1. Who will demonstrate what behavior or skill?
2. How will this skill be demonstrated? What will the skill look like as it is demonstrated and/or at what level will the skill be demonstrated?
3. Where or under what condition will the skill be demonstrated?
4. How frequently will the skill be demonstrated (What are the criteria for mastery)?
5. By when will the skill be demonstrated?

Examples of some poorly written goals (and their improvements) are provided in Table 2.3. Further examples are available in the following texts: *Creating a Win-Win IEP for Students with*

TABLE 2.3 Writing Goals and Objectives

Poorly Written Goal	Well-Written Goal
John will improve his communication skills with peers and adults in the classroom.	John will independently respond to single-answer questions by pointing to (or picking up) a picture card on four out of five opportunities during circle and snack activities.
Susan will stop calling out in class.	Susan will independently raise her hand and wait for teacher acknowledgement before speaking during independent and group work on three out of five opportunities.
When it is time for Michael to sort the silverware, he will put the silverware as accurately as possible.	Michael will independently sort 10 forks, 10 knives, and 10 spoons into the correct sections of a silverware tray, with 90% accuracy for 3 consecutive days.
Mark will increase letter recognition.	When presented with three alphabet cards, Mark will point to named letter on four of five trials over three consecutive sessions per letter. And/Or: Given a field of five alphabet cards and their corresponding matches, Mark will independently match letters to sample on 9 out of 10 trials over three consecutive sessions.
Jacob will improve his listening skills.	Jacob will follow two-step directions when presented by the teacher during group instruction with no more than one verbal prompt on four out of five opportunities.

Autism (Fouse, 1999), *Negotiating the Special Education Maze* (Anderson, Chitwood, Hayden, & Takemoto, 2008) and *Writing Measurable IEP Goals and Objectives* (Bateman & Herr, 2006).

Designing an appropriate instructional program requires more than just accurate assessment data, but it cannot be done in its absence. In addition to linking assessment data to the creation of goals and objectives within the student's IEP (see Box 2.6), adequate instructional planning also must include a plan for actually teaching the specified skills. In this respect, educators may benefit from the use of curricula developed specifically for students with ASD to guide their instructional approaches. A list of and commercially available curricula and resources that can assist in identifying appropriate instructional targets and in writing clear, objective, measurable goals and objects is provided in Table 2.4.



BOX 2.6 Trends and Issues # 3

A Checklist for Linking Assessment Results to Instructional Planning

The following guidelines are suggested for ensuring that assessment results are utilized in the most useful way possible in designing an appropriate instructional program. Key steps in the instructional planning process are listed, along with links between the assessment process and creation of an individualized education program (IEP) for students with ASD.

- Was the assessment multidisciplinary? Was it conducted by personnel with background experience and skills in the areas listed below?
 - Child development
 - Autism Spectrum Disorders
 - Behavior
 - Communication
 - Experience with the specific child across a variety of settings and situations
- Are the following areas documented in the assessment report?
 - Determination and statement of eligibility
 - The child's developmental level(s)
 - Implications of eligibility and developmental levels for behavior
 - Assessment of ALL areas related to the suspected disability (see below)
- Are all the required components of the IEP documented, including the following?
 - Present level of performance (based on a variety of assessment findings)
 - Measurement of existing objectives and progress toward mastery
 - New goals and objectives written for *all areas related to assessment*
 - Description of how new objectives will be measured to determine progress
 - Discussion of placement related to the LRE requirement
 - Description of services and settings, including the frequency and duration of service
 - Long-term goals of the parents
- Do the outlined goals, objectives, and services address all areas of need?
 - Implications of Autism Spectrum Disorders on behavior and development
 - Language and communication
 - Social development
 - Behavior
 - Cognitive development
 - Gross and fine motor skills
 - Family participation
 - Transition from school to work

- Does the program description provide for coordination, collaboration, ongoing training, and supervision of all service providers and parents?
 - Does the data collection described in the child's or student's plan provide for the documentation of necessary information? Does the documentation establish timelines and identify criteria for making decisions?
 - Data collection should allow for documentation of whether objectives have been met, history of student progress toward goals, provision of services, and curricula used.
 - Timelines for initiation of service, periodic assessment and data collection, and dates for reevaluation should be specified.
 - Decision-making criteria should be specified in order to allow for evaluation of program effectiveness.
- Were dates set for further program evaluation and planning?

Source: Information from Collaborative Work Group on Autistic Spectrum Disorders (July 1997). *Best Practices for Designing and Delivering Effective Programs for Individuals with Autistic Spectrum Disorders*. California Department of Education: Sacramento, CA.

TABLE 2.4 Commercially Available Curricula and Assessment Instruments that Provide Curricular Input

Curriculum/ Assessment Instrument	Description	Skills Addressed
<i>Psychoeducational Profile: Third Edition (PEP-3)—Assessment Instrument</i> Schopler, Lansin, Reichler, & Lee (2005)	<ul style="list-style-type: none"> • The assessment approach of this instrument maps easily onto instructional planning efforts • Graphically charts uneven and idiosyncratic development as well as emerging skills • Also includes a Caregiver Report that estimates the child's developmental level compared with typical children. The report consists of three subtests: Problem Behaviors, Personal Self-Care, and Adaptive Behavior 	<ul style="list-style-type: none"> • Cognitive Verbal/Preverbal • Expressive Language • Receptive Language • Fine Motor • Gross Motor • Visual-motor Imitation • Affective Expression • Social Reciprocity • Characteristic Motor Behaviors • Characteristic Verbal Behaviors
<i>TEACCH Transition Assessment Profile (TTAP) Second Edition</i> Mesibov, Thomas, Chapman, & Schopler (2007)	<ul style="list-style-type: none"> • Revision of the <i>Adolescent and Adult Psychoeducational Profile (AAPEP)</i> • Assessment instrument developed for adolescent and older children with Autism Spectrum Disorders • Three different environmental contexts assessed • Allows for direct relation to instructional planning that satisfies Individuals with Disabilities Education Act (IDEA) transition planning requirements 	<ul style="list-style-type: none"> • Vocational Skills • Vocational Behavior • Independent Functioning • Leisure Skills • Functional Communication • Interpersonal Behavior

TABLE 2.4 (Continued)

Curriculum/ Assessment Instrument	Description	Skills Addressed
<p><i>BRIGANCE</i> (<i>IED-II</i>) Criterion-Referenced Skill Areas Brigance (2004)</p>	<ul style="list-style-type: none"> • In addition to being a standardized norm-based assessment instrument, the Brigance (IED-II) is also a criterion-referenced measure • Directly relates to instructional areas to be targeted in programs for young children • Provides developmental sections with comprehensive skills sequences • Also allows for program evaluation 	<ul style="list-style-type: none"> • Preambulatory Motor Skills • Gross-motor Skills and Behaviors • Fine-motor Skills and Behaviors • Self-help Skills • Speech and Language Skills • General Knowledge and Comprehension • Social-emotional Development • Early academic skills sections: <ul style="list-style-type: none"> • Readiness • Basic Reading Skills • Manuscript Writing • Basic Math
<p><i>Individual Goal Selection Curriculum (IGS)</i> Romanczyk, Lockshin, & Matey (1994)</p>	<ul style="list-style-type: none"> • A curriculum that is based on principles of Applied behavior analysis • Skills are analyzed in relation to the target or goal behaviors, which are broken down to their essential elements • Allows for identification of skills to target in the child’s intervention program that are tailored to the child’s difficulties 	<ul style="list-style-type: none"> • Maladaptive Behavior • Attentive Skills • Speech • Receptive Language • Expressive Language • Concept Formation • Gross Motor Skills • Self-Help and Daily Living Skills • Social Skills • Reading • Fine Motor Skills • Written Communication • Arithmetic • Cultural Skills • General Information • School-related Skills • Life Relevant Skills • Leisure Skills • Emotional and Self-control
<p><i>The Assessment of Basic Language and Learning Skills—Revised (ABLLS–R)</i> Partington (2008)</p>	<ul style="list-style-type: none"> • An assessment, curriculum guide, and program monitoring device • Based on the principles of Applied behavior analysis • Provides criterion-referenced information regarding current skills and deficits in 25 areas, along with a curriculum that can serve as the basis for the selection of educational objectives 	<ul style="list-style-type: none"> • Cooperation and Reinforcer Effectiveness • Visual Performance • Receptive Language • Motor Imitation • Vocal Imitation • Requests • Labeling • Intraverbals • Spontaneous Vocalizations • Syntax and Grammar • Play and Leisure

(continued)

TABLE 2.4 (Continued)

Curriculum/ Assessment Instrument	Description	Skills Addressed
<i>A Work in Progress: Behavior Management Strategies and a Curriculum for Intensive Behavioral Treatment of Autism</i> Leaf & McEachin (1999)	<ul style="list-style-type: none"> • Information obtained from the completed assessment can be used to develop an effective Individualized Education Program (IEP) • A curriculum based on principles of Applied behavior analysis • Instructional programs fit roughly into four categories • Also provides suggestions for toilet training, eating, play and social skills, sleep problems, and dealing with disruptive and self-stimulatory behaviors 	<ul style="list-style-type: none"> • Social Interaction • Group Instruction • Classroom Routines • Generalized Responding • Reading, Math, Writing, Spelling • Eating • Dressing , Grooming, Toileting • Gross Motor Skills • Fine Motor Skills • Imitation: verbal and motor • Language and Communicative Concepts: labeling, pronouns, yes/no, following instructions, prepositions, plurals, attributes, asking questions, conversation • Cognitive: same and different, first and last, before and after, quantities • Academic and Pre-academics: reading, writing, stories, sequencing, recall
<i>Behavioral Intervention for Young Children with Autism</i> Maurice, Green, & Luce (1996)	<ul style="list-style-type: none"> • A curriculum based on principles of Applied behavior analysis 	<ul style="list-style-type: none"> • Attending • Imitation • Receptive Language • Expressive Language • Abstract Language • Pre-academics • Academics • School Readiness • Self-help • Socialization

Summary

Instructional planning for students with ASD requires knowledge and experience and a range of approaches and strategies. Programming is only as useful as the foundation on which it is based; assessment provides that solid foundation. The ultimate goal of assessment is to obtain data that can be used to devise an appropriate intervention plan. There are many approaches for assessment of individuals with ASD from diagnostic to psychoeducational evaluations, and including formal and informal measures. The range of available assessment

tools and strategies is wide, allowing clinicians the flexibility to select a battery of measures that is individualized to the assessment questions and student's characteristics. In addition to assessment scores, the use of modifications during testing greatly increases the chance of success in formal testing situations and provides insight in to the student's learning process and preferences. These strategies can provide a comprehensive picture of the student that will ensure the greatest success in developing the most appropriate instructional plan possible.

Chapter Review Questions

1. Explain why intellectual performance, speech and language, and adaptive behavior are all considered core assessment domains for the evaluation of ASD. Why are norm-referenced tests preferred for these assessments? (Objective 1)
2. Discuss three ways in which the characteristics of individuals with ASD may affect the evaluation process and selection of evaluation procedures. (Objective 2)
3. Describe several ways that standardized test administration procedures can be modified for students with ASD. Why might you use such procedures? How would you interpret the results? (Objective 3)
4. What does research suggest about the stability of evaluation results over time for individuals with ASD? What factors are related to outcome and how do these correspond to what is viewed as best practices for assessment and intervention? (Objectives 4 and 5)
5. Discuss the way that behavioral observations during test administration can assist in the development of appropriate goals, objectives, and accommodations for a student. (Objective 6)
6. The National Research Council discusses their general recommendations for educating children with ASD. List the six interventions that were mentioned as priority instructional areas and a target goal in that area for a student with whom you've worked. (Objective 7)
7. Discuss the NRC recommendations with respect to the "characteristics of effective interventions." (Objective 7)

Key Terms

Adaptations	56	Dynamic assessment	44	Portfolio assessment	44
Assessment	42	Generalization	41	Present levels of performance	43
Ceiling	51	Goals	59	Process-oriented assessment	45
Correlated	54	Individualized Education Program (IEP)	46	Psychoeducational Evaluation	47
Criterion-referenced assessments	43	Informal assessments	43	Rapport	39
Criterion-referenced tests	43	Information processing	54	Standardized tests	42
Curriculum-based	44	Maintenance	41	Stimulus overselectivity	42
Curriculum-based measurement	44	Modifications	56	Task analysis	44
Developmental assessments	54	Norm-referenced tests	42	Work sample analysis	44
Diagnostic assessment	47	Objectives	59		

Internet Resources

<http://www.autismsocietyofwa.org/files/bestpracticesguide.pdf>

A PDF file entitled: "Best Practices for Designing and Delivering Effective Programs for Individuals with Autistic Spectrum Disorders." This is a guide sponsored by the California Departments of Education and Developmental Services that outlines recommendations of a collaborative work group for the assessment and treatment of students with ASD.

The guide provides information on assessment domains and measures, as well as curricula and instructional approaches.

<http://smhp.psych.ucla.edu/qflautism.htm>

An online clearinghouse of links to websites containing information on the topic "Educating Children with Autism." Links are organized by subtopics, which include "Guides to Autism

Disorders,” “Education and Management (Teaching Strategies),” “Implementation and Legislation,” and “Support/Network Resources” among others.

<http://www.polyxo.com>

Polyxo.com—Teaching Children with Autism is a resource for parents, professionals, or anyone

interested in teaching children with autism or other related developmental disorders. Contains curriculum resources and data collection forms.

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