



# Assessment of Intellectual Disabilities (ID) and Comorbid Disorders in Children

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Mark R. McGowan and Jenna M. Hennessey

## Introduction

An intellectual disability (ID) is a neurodevelopmental disorder that is characterized by deficits in both intellectual capacity and adaptive functioning. ID impacts functioning over the course of an individual's lifespan and is marked by onset in the developmental period. Prevalence rates in the general population have been estimated to be approximately 1%, with significant variability noted based on factors such as age (APA, 2013). For children birth to 5 years of age who present with significant intellectual delays, a diagnosis of global developmental delay (GDD) is frequently rendered. A diagnosis of GDD is appropriate when norm-referenced assessments indicate that two or more developmental domains of functioning are significantly below expected milestones and the use of standardized intellectual assessments is not clinically feasible or warranted (APA, 2013). Prevalence estimates suggest that between 1% and 3% of children birth to 5 years of age have GDD (Srouf & Shevell, 2014). Although developmental delays may resolve as the child matures, approximately two-thirds of children diagnosed with GDD are estimated to meet the diagnostic criteria for a diagnosis of ID after 5 years of age (Shevell, 2008). As part of routine healthcare visits, the American Academy of Pediatrics (AAP) recommends developmental surveillance at every well-child visit and formal developmental screening at ages 9, 18, and 24 months (American Academy of Pediatrics, 2018).

While the onset of developmental delays must manifest prior to the age of 18, the presentation of characteristics and features of ID depends on etiology and severity. Both genetic and environmental factors contribute to this condition, with the most common causes of the disorder being linked to genetic or chromosomal abnormalities, metabolic disorders, fetal exposure to teratogen or illness, and perinatal complications (Toth et al., 2015). Recent estimates have suggested that a known etiology can be determined in approximately 70% of ID cases, with chromosomal abnormalities and metabolic errors accounting for between 40% and 50% of these cases (Toth et al., 2015). The remaining 20% to 30% of cases with known causes are associated with environmental influences, such as perinatal complications and acquired medical conditions (Srivastava & Schwartz, 2014). Given that genetic differences account for the preponderance of known causes, the American Academy of Pediatrics (2014)

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M. R. McGowan (✉) · J. M. Hennessey

Department of Psychology, Indiana University of Pennsylvania, Indiana, PA, USA

e-mail: [mmcgowan@iup.edu](mailto:mmcgowan@iup.edu)

has provided guidance to practitioners concerning the optimal medical genetics evaluation for children.

Individuals with ID also present with a wide variety of comorbid conditions including developmental disorders, neurological disorders, and behavioral disorders (Johnson et al., 2006). The degree of diversity in etiology and associated medical, psychiatric, and social features in this population presents numerous diagnostic and intervention planning challenges (Turygin et al., 2014b). While a comprehensive review of all forms of comorbidity is beyond the scope of the present chapter, an overview of a few fundamental clinical considerations is necessary. The central clinical issue facing practitioners relates to symptom overlap between common co-occurring conditions and ID that make differential diagnosis and treatment planning particularly challenging (Tureck et al., 2014). For example, autism spectrum disorders (ASD) have received considerable attention for its diagnostic overlap with ID (Bamburg et al., 2001; LoVullo & Matson, 2009; Matson & Shoemaker, 2009; Smith & Matson, 2010; Wilkins & Matson, 2009). As a practitioner faced with the complex task of making an initial diagnosis, the clinical presentation of social skills deficits, stereotypic behaviors, and adaptive skills deficits are common in both disorders. Differential diagnosis between these two conditions often becomes even more complex when evaluating young children whose language ability is only beginning to emerge. In these clinically ambiguous situations, practitioners must resist the temptation to succumb to the tendency to consider all abnormal behavior observed in individuals with intellectual deficits as a manifestation of their cognitive limitations, which is a bias often referred to as diagnostic overshadowing (Matson & Scior, 2004). The clinical acumen required to render sound decisions in these situations must be grounded in the empirical literature concerning dual disorders (Hennessey & McGowan, 2020).

A multimethod, multisource approach is recommended practice for conducting comprehensive assessments of children suspected of having a disability (Christ & Aranas, 2014; Mash & Barkley, 2007; Whitcomb, 2018). This approach to assessment utilizes a variety of direct and indirect methods of assessment to diagnose, problem-solve, and generate interventions for the child (Armstrong et al., 2013). For example, observing a child's behavior in a classroom setting or administering an intelligence test to a child would be considered direct method. Examples of indirect methods would include reviewing a child's medical records or using behavior rating scales. This approach to assessment also seeks to gather data from different informants including the child, their parents, and others who know the child well. Ideally, these varied data sources would provide the practitioner with a better understanding of how the child functions in different settings, that is, home or school.

This chapter will review direct and indirect assessment measures used to evaluate children's cognitive, adaptive, behavioral, emotional, and social functioning that are important when considering diagnostic and treatment planning for children with ID. Current diagnostic practice guidelines emphasize the importance of an assessment of intellectual ability and adaptive functioning; while also taking into consideration an investigation of etiology and comorbid mental, emotional, and behavioral disorders (American Psychiatric Association [APA], 2013). Prior to considering evidence-based assessment measures, we will first provide a brief review of important diagnostic considerations that have changed how ID is conceptualized and comorbidity is considered in youth.

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## Diagnostic Considerations

Although the diagnostic criteria have not changed substantially over the past 50 years, the way the criteria are used to arrive at the diagnostic formulation for ID has evolved in accordance with advances in the field (Buntinx & Schalock, 2010). These advancements have resulted in two paradigm shifts in

how ID is conceptualized. These advances have moved the field away from a primary descriptive model of disability to a functionality model that can be used for diagnosis, classification, and planning support (Luckasson & Schalock, 2013).

Within the functionality model, a multidimensional framework of human functioning is used to guide clinical judgment (Luckasson & Schalock, 2015; Schalock et al., 2010). The model adopts a social-ecological approach to understanding human functioning that takes into consideration intellectual abilities, adaptive behavior, health, participation, and context (Luckasson & Schalock, 2013). These five dimensions are used diagnostically (see Tassé et al., 2016) and for classifying individuals according to their level of independent functioning (see Schalock & Luckasson, 2015). Intellectual limitations may impact an individual's reasoning, problem-solving, planning, abstract thinking, judgment, or capacity for learning. Adaptive limitations represent an inability to meet normative expectations for independence and self-sufficiency in daily living due to deficits in conceptual, social, and practical adaptive skills. The health dimension requires an understanding of an individual's physical, mental, and social well-being. The participation and context dimensions include an understanding of an individual's interaction with their environment including the performance of social activities and factors that either facilitate or inhibit social engagement, respectively.

The second shift relates to how classification occurs. Classification provides a means for describing functional levels, operationalizing the level of support needed, considering health factors that may be of clinical importance, and evaluating legal status (Shalock & Luckasson, 2015). With this shift, the focus has changed from the historical reliance on IQ scores for classifying an individual's level of functioning to one that is based upon the individual's adaptive behavior. This change in diagnostic nomenclature has been adopted by the American Association on Intellectual and Developmental Disabilities (AAIDD; Schalock et al., 2010) and the American Psychiatric Association (APA, 2013). The World Health Organization (WHO) has also adopted a similar classification system in the *International Classification of Diseases-11th Edition* (ICD-11; WHO, 2018) that is based on the consideration of both intellectual ability and adaptive functioning for classifying individuals. While the classification system continues to be comprised of four levels (e.g., mild, moderate, severe, and profound), the *DSM-5* now uses a descriptive approach to operationalize severity levels (see Table 28.1) rather than the score ranges associated with previous IQ bands. It is also relevant to note that researchers have introduced analogous bands based upon adaptive behavior levels that may be used when considering other taxonomies, that is, *ICD-11* (Tassé et al., 2012). The American Association on Intellectual and Developmental Disabilities (AAIDD) also recommends conceptualizing ID in terms of needed supports based upon how long and how much support is needed in various areas of functioning. The AAIDD has published a semi-structured interview to assist clinicians with identifying the type and intensity of supports needed for adolescents (Thompson et al., 2016). The clinical implications of this change mean that, while intelligence tests continue to play an important role in determining that the criteria necessary for diagnosing ID have been met, clinical determinations concerning the degree of impairment are based on more readily observable behaviors that form the foundation for treatment planning and progress monitoring (Horn & Fuchs, 1987). Within this comprehensive view of ID as a multifaceted construct, a nuanced appreciation of the role dual disorders may play in diagnosis and treatment is warranted. Therefore, a brief review of the literature will be followed by an introduction to the primary constructs required for the diagnoses of ID that will highlight diagnostic and clinical implications associated with selecting and interpreting these instruments.

**Table 28.1** Intellectual disability severity levels

| Severity level | Conceptual domain  | Social domain   | Practical domain   |
|----------------|--|---|--|
| Mild           | Based on age-related expectations, children demonstrate difficulties with learning academic skills, with particular difficulty understanding abstract concepts being noted.  | Social interactions are immature, with communication, conversations, and language being more concrete. Difficulties regulating emotional and behavioral functioning may be noted.   | In childhood, the individual may function in an age-expected manner. Adolescents may need assistance with complex living tasks.  |
| Moderate       | Developmental delays in cognitive and language are generally evident in preschool. Grade school children demonstrate learning and performance deficits in all curricular areas, with proficiency rarely exceeding an elementary skill level in adolescence.                  | Social judgment and decision-making are limited. Communication is simplistic in nature and interpersonal skills are less complex, with difficulties interpreting social cues often noted.   | While self-sufficiency may be achieved by adolescence, development of personal care skills requires an extended period of teaching with ample opportunities for practice.  |
| Severe         | Conceptual skills are limited, with little understanding of written language, numeracy, time, or money.  | Vocabulary and grammar are limited to simplistic words or phrases. Communication is used for socialization rather than conveying thoughts or ideas.   | Ongoing support for all activities of daily living is required, with constant supervision being needed for safety. Maladaptive behaviors, that is, self-injury, may be present.  |
| Profound       | Conceptual skills are limited to an understanding of the physical world. Use of objects in a goal directed fashion may be learned with practice. An ability to match and sort objects may be achieved, but co-occurring motor and sensory impairments may limit functioning. | Communication is usually nonverbal, with a limited understanding of instructions or gestures. While co-occurring sensory and physical impairments may prevent many social activities, individuals will use gestural and emotional cues to initiate or respond in social interactions. | Children and adolescents are dependent on others for all aspects of physical care, health, and safety. Maladaptive behavior, that is, stereotypies, may be present. Co-occurring sensory and physical impairments may greatly limit functioning. |

Based on DSM-5 (APA, 2013)

## Comorbidity

As noted previously, comorbidity is common among individuals with ID. Consequently, an understanding of how comorbidity impacts diagnoses and treatment is critical for any practitioner working with this population. While a comprehensive review of all forms of comorbidity is beyond the scope of the present chapter, an overview of a few fundamental clinical considerations is necessary. The central clinical issue facing practitioners relates to symptom overlap between common co-occurring conditions and ID that make differential diagnosis and treatment planning particularly challenging (Tureck et al., 2014). For example, autism spectrum disorders (ASD) have received considerable attention for their diagnostic overlap with ID (Bamburg et al., 2001; LuVullo & Matson, 2009; Matson & Shoemaker, 2009; Smith & Matson, 2010; Wilkins & Matson, 2009). As a practitioner faced with the complex task of making an initial diagnosis, the clinical presentation of social skills deficits, stereotypic behaviors, and adaptive skills deficits are common in both disorders. Differential diagnosis between these two conditions often becomes even more complex when evaluating young children whose language ability is only beginning to emerge. In these clinically ambiguous situations, practitioners must resist the temptation to succumb to the tendency to consider all abnormal behavior

observed in individuals with intellectual deficits as a manifestation of their cognitive limitations, which is a bias often referred to as diagnostic overshadowing (Matson & Scior, 2004). The clinical acumen required to render sound decisions in these situations must be grounded in the empirical literature concerning dual disorders. Within this body of research, a few emerging trends need to be addressed due to their clinical relevance to the assessment and diagnosis of ID.

First, the severity of the intellectual deficit plays an important role in understanding vulnerability to other comorbid conditions. In general, a negative correlation has been observed between the severity of cognitive deficit and the prevalence of comorbidities (Medeiros et al., 2014; Minjarez et al., 2011; O'Brien & Pearson, 2004; Tureck et al., 2014). In other words, the lower the intelligence quotient (IQ) the greater the prevalence rate for co-occurring symptoms. This general observation has been noted among various comorbid disorders including ASD (Matson & Shoemaker, 2009) and psychiatric disorders (Dekker & Koot, 2003; Turygin et al., 2014a). Also, research has noted that children and adolescents with moderate and profound ID frequently suffer from higher prevalence rates of co-occurring physical and/or neurological handicaps that impact their language, motor, hearing, and vision (Minjarez et al., 2011). Lastly, a lower IQ has also been suggested to be a predictor of poorer prognosis and response to intervention (Ben Itzhack et al., 2008).

The second empirical trend relates to the relationship between comorbidity and impairment. There is a positive correlation that has been observed between the number of comorbidities and the pervasiveness of the limitations on the individual's functional independence (Dekker & Koot, 2003; Matson et al., 1999a, b; Smith & Matson, 2010). Some researchers have attempted to explain this correlation by suggesting that having multiple comorbid disorders exacerbates functional limitations for individuals with ID by making their condition more severe (Turygin et al., 2014a, b). However, these differences are noted both in terms of the severity of core symptoms as well as the increased prevalence rates for other co-occurring problems, for example, stereotypies and self-injury (Matson et al., 2009a, b; Munson et al., 2008). For example, research findings have suggested that individuals with co-occurring ASD and ID have more diverse behavioral challenges and skill deficits by comparison to counterparts who present with only one of these conditions (Boucher et al., 2008). Likewise, Hahn et al. (2015) noted that comorbidity played a role in predicting the developmental trajectories of individuals with ID who were able to achieve greater functional independence.

Thirdly, there is preliminary research to suggest that understanding the type of comorbidity may be useful for guiding diagnosis and treatment efforts. While this line of research has typically focused on between-group differences based on comorbidity, research has also included attempts to identify symptom clusters that may be more prevalent in this population (Tremblay et al., 2010; Turygin et al., 2014a, b). For example, Matson et al. (2003b) investigated group differences in adaptive behavior among individuals who were diagnosed with ID and either ASD or psychosis. In this study, the group with a comorbid diagnosis of ASD demonstrated more significant deficits in social and adaptive behavior by comparison to those who presented with comorbid psychosis. In a study by Kozłowski et al. (2011), the authors found significant correlations among psychopathology symptom clusters in a sample of individuals diagnosed with ID. Among these individuals, the most commonly occurring were mood, mania, and anxiety symptom clusters. Regardless of methodological differences, these emergent trends underscore the importance of considering comorbid conditions as part of routine assessment practices of practitioners working with individuals who present with ID. More importantly, the impact that dual disorders have on the developmental trajectories and ultimate functional independence of these individuals underscores the importance of incorporating treatment planning efforts to address dual disorders. In reviewing available assessments, we will provide a brief overview of the primary constructs that form the basis for the diagnosis of an ID followed by a discussion of the various considerations and adaptations that may be warranted when assessing individuals with dual disorders who present with language, motor, sensory, and social, emotional, or behavioral challenges.

## Intellectual Assessments

Normed-referenced intelligence instruments have been utilized over the past 100 years to assist clinicians in making diagnostic decisions regarding the presence of an ID. Of the most renowned contemporary intelligence tests, the authors have categorized these assessments under three classifications when assessing a dual diagnosis of an ID with a language, physical, sensory, social-emotional, or behavioral impairment. For this review, these classifications were created solely based on the range of modifications permitted during standardized administrative practices.

The first classification grouping includes assessment tools that permit few or limited modifications to standardized administration procedures. The Wechsler Intelligence Scale for Children, Fifth Edition (WISC-V; Wechsler, 2014), the Differential Ability Scales, Second Edition (DAS-II; Elliot, 2007), and the Kaufman Assessment Battery for Children, Second Edition (KABC; Kaufman & Kaufman, 2004a) are instruments that fall under this category. These measures offer clinicians limited flexibility in their discretion to use accommodations beyond options to administer portions of the test to acquire an estimation of intellectual functioning (see Table 28.2). For example, the DAS-II's Special Nonverbal Composite is helpful in assessing estimates of intellectual functioning in children with hearing impairments. By contrast, for individuals with severe orthopedic and motor impairments, verbal and diagnostic subtests may be utilized to acquire a limited sample of an individual's cognitive capacities that serve as an approximation of intellectual ability (Elliot, 2007). When using the full-scale IQ index scores for these instruments, however, no adjustment for an individual's impairment is made, and resulting intelligence estimates represent normative comparisons to same-age peers.

On the opposite end of this continuum, assessment instruments including the Stanford-Binet Intelligence Scales, Fifth Edition (SB5; Roid, 2003a), and the Woodcock-Johnson IV Tests of Cognitive Abilities (WJ IV COG; Schrank et al., 2014), permit examiners to use a wide range of manualized accommodations when assessing the intellectual ability of individuals with language, physical, sensory, social-emotional, or behavioral impairments (see Table 28.2). This second classification group allows clinicians to acquire an estimate of individuals' cognitive abilities under optimal conditions. Optimal conditions are understood to represent adaptations that intentionally mitigate the impact of an individual's deficit on their performance of the task. For example, an individual who presents with a physical handicap that impacts movement may be permitted to respond orally instead of transcribing answers. It is important to note that these assessment batteries have been criticized for their flexibility in allowing the use of accommodations, which may conceal deficits as well as impact their reliability and validity (Sattler, 2007).

Finally, the last classification group covers tests that were created for use in the assessment of individuals with comorbid communication disorders. Instruments that fit into this category include, the Universal Nonverbal Intelligence Test-Second Edition (UNIT-2; Bracken, & McCallum, 2016a), the Leiter International Performance Scale-Third Edition (Leiter-3; Roid et al., 2013a), the Comprehensive Test of Nonverbal Intelligence- Second Edition (CTONI-2; Hammill et al., 2009a), and the Test of Nonverbal Intelligence- Fourth Edition (TONI-4; Brown et al., 2010a). Collectively, the test design and administration procedures are specifically constructed to minimize the impact of examinee impairment through modifications to instructions or to how the examinee responds to each task. However, these instruments also produce an estimate of intellectual functioning that is based on a limited sample of an individual's cognitive capacities by comparison to the other two classification groups. Therefore, a comprehensive assessment of individuals' overall intellectual functioning, as described by the CHC model, is not able to be achieved. In the sections that follow, we will discuss assessment considerations for individuals with a dual diagnosis based on the nature of the impairment.

Table 28.2 Assessment considerations for selecting intelligence measures to identify children and adolescents with intellectual disabilities

| Assessment instrument   | Normative and/or clinical sample included in manual |    |    |       | Suggested modifications provided in manual |    |    |       | Assessment accommodation considerations  |
|---|---|----|----|-------|--|----|----|-------|--|
|   | LI  | PI | SI | SE/BI | LI   | PI | SI | SE/BI |  |
| Comprehensive Test of Nonverbal Intelligence, Second Edition (CTONI-2; Hammill et al., 2009a) |   |    | ✓  |       | ✓  |    | ✓  |       | <p>The CTONI-2 is a “language reduced” assessment that solely requires the examinee to point to their responses (Hammill et al., 2009b, p. 1). Nonverbal instructions can be provided to individuals with language and hearing impairments (Hammill et al., 2009b).</p> <p>For examinees who have a severe hearing impairment or who are deaf, clinicians may use “American sign language, manually coded English, aural/oral English, or signed supported speech” (Hammill et al., 2009b, p. 9).</p> <p>No accommodations are mentioned in the examiner’s manual for individuals with severe orthopedic or motor impairments (e.g., not being able to point to responses). The normative or clinical samples do not include individuals with visual impairments.</p>  |
| Differential Ability Scales, Second edition (DAS-II; Elliott, 2007)                           | ✓   |    | ✓  |       | ✓  |    |    |       | <p>The Special Nonverbal Composite is helpful in assessing estimates of intellectual functioning in children with hearing impairments. By contrast, for individuals with severe orthopedic and motor impairments, verbal and diagnostic subtests may be utilized to acquire an estimation of intellectual functioning (Elliott, 2007). Administration instructions are provided in American Sign Language for parts of the assessment battery. Also, individuals may utilize communication modalities such as simultaneous communication, cued speech, and auditory amplification (Elliott, 2007).</p> <p>Per the administration guidelines, pointing and gesturing are permitted; however, “these types of responses on psychological tests have been reported to be ambiguous for children who are deaf and may be a source of potential error in scoring and interpretation” (Elliott, 2007, p. 213).</p> <p>Children with severe motor impairments may be disadvantaged on subtests that require the use of manipulatives. General assessment considerations per subtest are provided in Tables 9.1 and 9.2 for individuals who are deaf or hard of hearing (Elliott, 2007).</p> <p>The examiner’s manual also states that minimal modifications to standardized administration procedures are recommended to ensure reliable and valid results (Elliott, 2007). The normative or clinical samples do not include individuals with visual impairments.</p> |
| Kaufman Assessment Battery for Children, Second Edition, (KABC-II; Kaufman & Kaufman, 2004a)  | ✓   | ✓  | ✓  | ✓     | ✓  |    | ✓  |       | <p>The Nonverbal scale is intended for use for children with severe speech/language and hearing impairments. All nonverbal subtests can be administered in “pantomimes such as pointing, demonstrations, and facial gestures” (Kaufman &amp; Kaufman, 2004b, p. 27). The examinee may present their responses in American sign language for all subtests (Kaufman &amp; Kaufman, 2004b).</p> <p>The complex and lengthy directions on the KABC-II can lead to difficulties with understanding task demands, especially for children with impaired language functioning (Flanagan et al., 2013). The normative or clinical sample of individuals with sensory impairments only includes individuals with hearing impairments (Kaufman &amp; Kaufman, 2004b).</p>  |

(continued)

**Table 28.2** (continued)

| Assessment instrument   | Normative and/or clinical sample included in manual |    |    |       | Suggested modifications provided in manual |    |    |       | Assessment accommodation considerations   |
|---|---|----|----|-------|--|----|----|-------|---|
|   | LI  | PI | SI | SE/BI | LI   | PI | SI | SE/BI |   |
| <p>Leiter International Performance Scale, Third Edition (Leiter-3; Roid et al., 2013a)</p> | ✓   | ✓  | ✓  | ✓     | ✓  | ✓  | ✓  | ✓     | <p>The Leiter-3 offers nonverbal instructions as a standardized administration procedure for all subtests on this assessment. (Roid et al., 2013b). Manipulatives were redesigned in the Leiter-3 to accommodate individuals with physical disabilities (Roid et al., 2013b).</p> <p>The manual discusses, in detail, modifications for examinees with significant motor or communication deficits. Specific adaptations for individuals with physical or communication disabilities include “touch/scan responses, use a stop sign, design a Yes/No response system, and use of eye gaze” (Roid et al., 2013b, p. 70–71)</p> <p>A recommended accommodation for individuals with visual impairments include the use of “color cues” to help individuals separate visual images on the response cards (Roid et al., 2013b, p. 72)</p> <p>The normative or clinical samples do not include individuals with visual impairments.</p>  |
| <p>Stanford-Binet Intelligence Scales, Fifth Edition, SB5; Roid, 2003a)</p>                 | ✓   | ✓  | ✓  | ✓     | ✓  | ✓  | ✓  | ✓     | <p>Verbal and nonverbal formats for each factor measuring intelligence (g) allows for examiners to discern if language, visual, or motor impairment(s) are impacting intellectual functioning (Flanagan et al., 2013)</p> <p>Specific adaptations for orthopedic impairments and motor skills deficits include the use of assistive technology such as keyboards, touchpad devices, testing trays, and vocalization amplifiers can be used during administration if needed (Roid, 2003b).</p> <p>For individuals with visual impairments, magnification devices can be utilized. In addition, “portions of the verbal routing subtest and the verbal levels could be administered orally” (Roid, 2003b, p. 116).</p> <p>Specific guidelines are discussed in the examiner’s manual (see Appendix E) for providing accommodations, such as using sign language interpreters and cued speech, to individuals with hearing impairments (Roid, 2003b).</p> <p>There are no Braille or large-print editions of the SB5 available (Roid, 2003b).</p> <p>The SB5 was last modified and re-normed in 2003. Since the inception of the SB5, the diagnostic criteria for some disabilities have considerably been modified per the Diagnostic and Statistical Manual of Mental Disorder, Fifth Edition (DSM-5). Thus, the normative sample may not be representative of the current population of individuals with certain disabilities.</p> <p>Flexibility with administration procedures may influence the reliability and validity of this assessment (Sattler, 2007).</p> |
| <p>Test of Nonverbal Intelligence, Fourth Edition (TONI-4; Brown et al., 2010a)</p>         | ✓   | ✓  |    |       | ✓  |    | ✓  |       | <p>The instructions for the TONI-4 can be administered verbally or via pantomimes for individuals with language and/or hearing impairments (Brown et al., 2010b).</p> <p>The examinees provide their responses largely motor-free through means of pointing (Brown et al., 2010b).</p> <p>There were no accommodations mentioned in the examiner’s manual for individuals with significant orthopedic or motor impairments (e.g., not able to point to responses) as well as visual impairments.</p>  |



|  |          |          |          |          |          |          |          |   |  |
|--|----------|----------|----------|----------|----------|----------|----------|---|--|
| <p>Universal Nonverbal Intelligence Test, Second Edition (UNIT-2; Bracken &amp; McCallum, 2016a)</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p>  | <p>This instrument is useful to rule in or out an ID diagnosis in special populations with communication or language deficits (Bracken, &amp; McCallum, 2016b). The Unit-2 assessment is also recommended for individuals who are deaf or hearing impaired, due to no verbal responses are required (Flanagan et al., 2013). Responses are limited to gestures for most subtests, which may impact children with severe motor impairment (Bracken, &amp; McCallum, 2016b). Cube design subtest may be difficult for individuals with severe motor impairments to complete. Normative or clinical sample does not include individuals with visual impairments. The administration and scoring manual suggests for children with limited motor skills, use verbal subtests for estimates of cognitive ability (Wechsler et al., 2014). By contrast, the Non-verbal Index is useful to rule in or out an ID diagnosis in special populations such as language impairment and autism spectrum disorder with language impairment (Wechsler et al., 2014). Examinees with significant language visual, hearing, and/or motor deficits may not have the ability to perform one or more subtest(s); therefore, the examiner is not able to compute all Index and Full-Scale IQ scores for this instrument (Sattler, 2007). Motor demands are complex on Coding Subtest of the WISC-V, which may underestimate a child with orthopedic or motor impairment's ability to process information. Administering only the nonverbal portion of the WISC-V assessment for individuals with visual impairments may result in over or underestimating the intellectual ability of an examinee (Flanagan et al., 2013).</p> |
| <p>Wechsler Intelligence Scale for Children, Fifth Edition (WISC-V; Wechsler, 2014)</p>              | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>The WJ-IV COG provides specific guidelines (see Table 3–2 in manual) for each test, for using communication accommodations such as American sign language, manually coded English, signed supported speech, and aural/oral English (Mather &amp; Wendling, 2014, p. 50). For individuals with motor impairment, examiners may allow the examinee to type responses instead of writing answers in the response booklet. In addition, some responses may be provided via pointing or orally (Mather &amp; Wendling, 2014). Accommodations for individuals with hearing impairments include the use of an interpreter, use of amplification system, administer audio-recorded test orally, and use of voice recorder (Mather &amp; Wendling, 2014, p. 47–48). Accommodations for individuals with visual impairments include use of “prescribed optical devices, adaptations to materials, provide appropriate light source, if needed; provide black-lined response sheets or a black felt-tip pen instead of a pencil or enlarging print, acetate to reduce glare or increase contrast between stimulus and background, may need to mask parts of a page to reduce visual clutter; and consult with visual specialist to interpret results” (Mather &amp; Wendling, 2014, pp. 49–50). The WJ-IV COG provides suggested subtests (see Table 3–3 in manual) to administer to individuals with either low vision or blindness (Mather &amp; Wendling, 2014, p.54). Accommodations for individuals with attention and behavioral difficulties include informing examinee of expectation, removing distractions from testing room, and providing positive reinforcement (Mather &amp; Wendling, 2014). Similar to the SB5, flexibility with the use of accommodations during the administration of the WJ IV cog may impact the reliability and validity of this instrument.</p> |  |
| <p>Woodcock-Johnson IV Test of Cognitive Abilities (WJ IV COG; Schrank et al., 2014)</p>             | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>Similar to the SB5, flexibility with the use of accommodations during the administration of the WJ IV cog may impact the reliability and validity of this instrument.</p>  |  |

Note. LI language impairment, PI physical impairment, SI sensory impairment, SE/BI social-emotional, or behavioral impairment

## Adaptive Behavior

Adaptive behaviors form the foundation for personal independence and social competence. In the most simplistic terms, adaptive functioning is defined by the individual's interaction with his or her environment. As such, behaviors are deemed to be adaptive based upon the situational demands and cultural norms in the environment. For example, a behavior may be judged to be adaptive in the home environment but may be deemed inappropriate in the school environment. Further, the nature of the demands placed upon an individual also changes based upon age. For example, adaptive behavior for a young child would include assisting the caregiver with putting away their belongings, by comparison to an older school-age child who would be expected to use small electrical appliances independently. Therefore, adaptive behavior is understood to be a dynamic construct that is likely to be interpreted differently across situations and over time.

Theoretical conceptualizations of adaptive behavior have also evolved over time. This evolution has gone from a single, broadly defined domain to an empirically validated multifaceted construct that includes agreed upon elements. Contemporary definitions are now understood to include conceptual, social, and practical adaptive skills that have been learned by an individual and are used in community settings in the service of performing daily tasks (Schalock et al., 2010; Tassé et al., 2016). This definition has given rise to new developments in standardized instruments used to measure adaptive behavior (Tassé et al., 2012). As with all psychological instruments, the available measures of adaptive behavior come with various psychometric strengths and weaknesses. However, unlike intellectual assessments, the assessment of adaptive behavior includes both direct and indirect assessments. The use of indirect assessment, for example, asking teachers or parents to rate an individual's behavior, allows examiners a means for gathering data that may have been otherwise unavailable. For example, communication or cognitive deficits often make it difficult to obtain reliable information about symptoms from the individual. Therefore, a diagnosis is often made using objectively observable behaviors that can be reported by informants who have observed the individual in different settings. Given the dynamic nature of the construct and the susceptibility to bias due to cultural or environmental norms, the benefits of incorporating multi-rater methods cannot be overstated. When gathering information directly from the individual, there are a number of considerations and accommodations that can be used during the assessment. These considerations include repetitiveness in the standardization sample, reading items to examinees, use of an interview format, and use of communication devices or alternative means of communication (see Table 28.3).

While not designed as a comprehensive measure of adaptive behavior, the Supports Intensity Scale-Children's Version (Thompson et al., 2016; SIS-C) is a standardized assessment designed to measure support needs of children, ages 5 to 16 years, with intellectual and developmental disabilities. The SIS-C is organized into two sections. Medical conditions and behavioral concerns that may require substantial levels of support are included in the first section. The second section includes an assessment of the areas of home living, community and neighborhood, school participation, school learning, health and safety, social activities, and advocacy. Each item is rated according to frequency, amount, and type of support needed in each area. An adult version of the SIS-C is also available for individuals ages 16 years and older. A digital version of the SIS-C is also available. The SISOnline is a web-based platform designed to support administering, scoring, and reporting. The SIS-C holds particular promise for use in transition assessments (Seo, et al., 2017).

**Table 28.3** Assessment considerations for selecting adaptive functioning instruments to identify children and adolescents with intellectual disabilities

| Assessment instrument   | Norms/clinical sample included in manual |    |    |       | Assessment considerations  |
|---|--|----|----|-------|--|
|   | LI                                       | PI | SI | SE/BI |  |
| Adaptive Behavior Assessment System-Third Edition (ABAS-3; Harrison & Oakland 2015) | ✓  | ✓  | ✓  | ✓     | For the ABAS-3, respondents who present with visual impairments or a reading disability may have items on the rating scale read to them. Questions may also be read to respondents in the form of an interview if warranted (Harrison & Oakland, 2015). Clinical studies suggested that this instrument lacks construct validity for individuals who are deaf or hard of hearing on adaptive domains and adaptive skills areas on this assessment (Harrison & Oakland, 2015).  |
| Adaptive Behavior Scale-School – Second Edition (ABS-S;2; Lambert et al., 1993)     | ✓  | ✓  | ✓  | ✓     | The ABAS:2 can be administered via an interview format to allow information to be collected by an informant who presents with a physical or sensory impairment (Lambert et al., 1993). The ABS-S:2 was last modified and re-normed in 1993. Therefore, the norming population may not be representative of the current population of individuals with specific disabilities (Lambert et al., 1993).  |
| Scales of Independent Behavior-Revised (SIB-R; Bruininks et al., 1996)              |  | ✓  | ✓  | ✓     | For the Social Interaction and Communication subtest of this instrument, respondents may rate the examinee’s skills with the use of accommodations for communication such as American Sign Language and PEC boards (Bruininks et al., 1996). The SIB-R can be administered via a structured interview, which allows for information to be acquired from respondents who present with severe visual and motor impairments (Bruininks et al., 1996). Individuals with hearing impairments and behavior disorders were rated similarly on broad independent scores to a sample of individuals without disabilities when controlling for age and sex (Bruininks et al., 1996). Since the inception of the SIB-R, the diagnostic criteria for selected disabilities have considerably been modified per the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). Thus, the norming sample may not be representative of the current population of individuals with specific disabilities.   |
| Supports Intensity Scale-Children’s Version (SIS-C; Thompson et al., 2016)          | ✓  | ✓  | ✓  | ✓     | The SIS-C measures the level of support children and adolescents with intellectual and developmental disabilities require. The SIS-C is administered by a trained professional via a semi-structured interview with two or more respondents who have knowledge of the child’s level of functional independence (Thompson et al., 2016). The norming sample of the SIS-C included individuals from the following diagnostic classifications, Low Vision/Blindness, Deafness/Hearing Impairment, Psychiatric Disability, Developmental Delay, Physical Disability, Chronic Health Condition, Autism Spectrum Disorder, Brain/Neurological Damage, Speech Disorder, Language Disorder, Learning Disability, and Attention-Deficit/Hyperactivity Disorder (Thompson et al., 2014).   |
| Vineland Adaptive Behavior Scales-Third Edition (Vineland-3; Sparrow et al., 2016)  | ✓  | ✓  | ✓  | ✓     | The Vineland-3 can be administered via an interview format, which allows for respondents to participate if he/she is not able to complete the rating scale independently due to a physical or visual impairment (Sparrow et al., 2016). Examinees that utilize “sign language or electronic communication aids should receive the same scores as would be given if the behaviors were performed by speaking” (Sparrow et al., 2016, p. 45). The Vineland-3 assesses for internalizing and externalizing emotional and behavioral concerns as well as provides a helpful guide to assist with intervention planning (Sparrow et al., 2016). For individuals with sensory or motor impairments, use of assistive technology for accommodating for reading and writing deficits should not be counted against examinees for items pertaining specifically to reading and writing. Refer to the manual for specific administration recommendations (Sparrow et al., 2016). Although, permitting respondents to rate examinee’s adaptive functioning with use of accommodations may result in overestimating the examinee’s level of functional independence. |

*Note.* LI language impairment, PI physical impairment, SE/BI social-emotional/behavioral impairment

## Behavioral, Emotional, and Social Assessments

As noted previously, behavior problems are common among individuals with ID. Individuals with more severe forms of ID or with comorbid psychiatric disorders have the highest prevalence rates for behavior problems (Einfeld et al., 2006; Gardner & Hunter, 2003; Holden & Gitlesen, 2004; Lecavalier, 2006; Moss et al., 2000; Magyar et al., 2012; Rojahn et al., 2004). Behavior problems are generally defined as actions that significantly interfere with safety, learning, or social functioning. Estimates suggest that approximately 7 to 15% of youths with ID demonstrate behavior problems (Emerson, 2005; Myrbakk & von Tetzchner, 2008). Common displays of behavior problems include aggressive behavior, self-injurious behavior (SIB), and stereotypic behavior (Medeiros et al., 2014). Emerging evidence also suggests that approximately 40% of children and adolescents with ID have a co-occurring psychiatric disorder. The most common comorbid disorders are disruptive behavior disorders (25%), Attention Deficit Hyperactivity Disorder (9%), and anxiety disorders (9%; Witwer et al., 2014). Social skills deficits are also common among individuals diagnosed with ID. Children with ID may struggle with interpreting social cues, maintaining eye contact, engaging in reciprocal dialogue, using nonverbal gestures and facial expressions, and inadequate conflict resolution skills (de Bildt et al., 2005).

Given the frequency of behavioral, emotional, and social sequelae among children diagnosed with ID, best practice for conducting a comprehensive multimethod, multisource assessment needs to incorporate valid and reliable assessments to guide treatment planning and service delivery. While direct observation approaches, for example, functional behavioral assessment (Medeiros et al., 2014; Steege et al., 2019), are particularly useful for developing interventions designed to address problem behaviors of youth with ID, the focus of this chapter will be on the use of rating scales and checklists as indirect methods of assessing behavioral, emotional, and social functioning. The use of rating scales and checklists provide a standardized format for assessing symptomatology of comorbid conditions by gathering information from individuals who know the child well. While parents and teachers are generally the first choice for informants, other individuals who are familiar with the child might also be a source for data, including classroom aides, day-care providers, surrogate parents or caregivers, and work supervisors. Using this multisource approach is considered best practice for gathering behavioral, emotional, and social data from different settings and contexts (Merrell & Walker, 2004; McConaughy & Ritter, 2014; Reddy, 2001; Shapiro & Krachowill, 2000; Rush et al., 2004; Stage et al., 2006).

By comparison to direct behavioral observation, the use of behavior rating scales and checklists is considered an indirect method of measuring a child's or adolescent's behavior because the respondent is being asked to provide their perception of behaviors. While useful for conceptualizing presenting problems and making actuarial predictions, the use of rating scales and checklists is susceptible to response bias and error variance (see Martin et al., 1986). Response bias pertains to how informants respond to the items on the scales, while error variance accounts for variability in responding due to subjectivity, situational specificity of behaviors, changes in ratings over time, and differences between instruments. It is also important to note that rating scales and checklists offer several advantages, including their efficiency in collecting data, their ability to provide data on low-frequency behaviors that are difficult to observe directly, and their ability to gather data from a variety of sources (Campbell & Hammond, 2014). While interrater agreement between respondents is frequently low to moderate (Achenbach et al., 1987; Stratis & Lecavalier, 2015), these differences are often beneficial for understanding how different settings or contexts may be influencing the child's behavior.

There are numerous rating scales and checklists available for use with children and adolescents. Rating scales and checklists are differentiated by their format for identifying behavioral problems or symptoms of concern. Rating scales use a Likert scale to allow respondents to provide information on

the frequency or intensity of behavior, while checklists require respondents to endorse items as present or absent. Rating scales and checklists are also frequently differentiated based on their intended use. For example, general-purpose rating scales are used to measure a broad array of behavioral, emotional, and social problems in youth. The Achenbach System of Empirically Based Assessment (ASEBA; Achenbach, 2001), the Behavior Assessment System for Children, third edition (BASC-3; Reynolds & Kamphaus, 2015), and the Developmental Behavior Checklist-2 (DBC2; Gray et al., 2018) would be examples of general-purpose or broad-band rating scales. General-purpose rating scales can be contrasted with specific-purpose or narrow-band rating scales that are used to measure a specific constellation of symptoms or behaviors, for example, attention deficit hyperactivity disorders (ADHD). Examples of narrow-band instruments would be the Attention Deficit Disorders Evaluation Scales-Fourth edition (ADDES-4; McCarney & Arthaud, 2013) or the Scale of Attention in Intellectual Disability (SAID; Freeman et al., 2015).

When selecting a rating scale or checklist, it is important to evaluate its technical characteristics and validity for use with children and adolescents with ID. The ASEBA (Achenbach, 2001), BASC-3 (Reynolds & Kamphaus, 2015), and Social Skills Improvement System (SSiS; Gresham & Elliott, 2008) are examples of assessment systems that are commonly used and widely available. An advantage of using these systems is that they include a variety of instruments and forms that are appropriate for a wide range of assessment and treatment settings. Further, given their large sample sizes and strong psychometric characteristics, these systems are considered to be among the gold standards for the assessment of behavioral, emotional, and social problems in children (Campbell & Hammond, 2014). While there are a number of empirical studies supporting the utility of these systems for conceptualizing behavioral, emotional, and social needs of youth with ID (Baker et al., 2007; Baker et al., 2003; Deb et al., 2008; Douma et al., 2006; Embregts, 2000; Emerson, 2005; Hardiman et al., 2009; Miller et al., 2004), emergent empirical attention to how behavioral, emotional, and social conditions manifest in youth with ID has yielded important insights that have given rise to the development of rating scales and checklists specifically designed for use with this population. A review of available general-purpose and specific-purpose instruments designed for use in assessing children and adolescents with ID will be provided in Table 28.4.

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## Evolution in Assessment Practices

Recent developments in the field of psychological assessment warrant consideration as we review the multimethod, multi-informant approach for the assessment of children with an ID. The most dramatic development has been a movement toward the development and adoption of digital assessments. Digital assessment is a broad term that has been evolving in scope for the past 20 years as the utilization of telehealth services have increased (Reed et al., 2000). For example, digital assessment would include both a remotely administered online instrument and the use of iPads for the administration and scoring of an instrument during a traditional face-to-face assessment (see Daniel et al., 2014). Historically, the forces driving these developments have been associated with technological advances coupled with an increased demand for access to psychological services (Boydell et al., 2014; Elford et al., 2000; Myers et al., 2008).

Evolutionary forces in the field of assessment have been heightened exponentially during the COVID-19 pandemic (Wright et al., 2020). The advancement of assessment practices that adapt performance-based measures, that is, intellectual assessments, for use in online telehealth applications has been particularly challenging. Researchers and practitioners alike have suggested that the need to adapt assessment practices to include remote, digital assessment has outpaced the empirical support for these practices (see Wright, 2020). While preliminary evidence suggests that equivalence exists

**Table 28.4** Rating scales and checklists for assessing behavioral, emotional, and social functioning in children and adolescents with intellectual disabilities

| Assessment instruments  | Purpose of assessment |          | Population assessment is used |             | Assessment description   |
|---|-----------------------|----------|-------------------------------|-------------|--|
|   | General               | Specific | Children                      | Adolescents |  |
| Rating Scales   |                       |          |                               |             |  |
| Aberrant Behavior Checklist (ABC; Aman & Singh, 1986)   | ✓                     |          |                               | ✓           | The ABC was designed to rate inappropriate and maladaptive behavior for individuals with ID. The ABC subscales include irritability, lethargy/social withdrawal, stereotypic behavior, hyperactivity/noncompliance, and inappropriate speech.  |
| Behavior Flexibility Rating Scale-Revised (BFRS-R; Peters-Scheffer et al., 2008)                |                       | ✓        | ✓                             | ✓           | The BFRS-R assesses the behavioral flexibility to change in the environment for children with intellectual and developmental disabilities. The results may be useful for identifying situations that serve as antecedent or consequent stimuli that can be used in a functional analysis of challenging behavior.  |
| Behavior Problems Inventory-Short Form (BPI-S; Rojahn et al. 2012)                              |                       | ✓        | ✓                             | ✓           | The BPI-S was developed to assess the three most common types of behaviors of concern for individuals with ID, autism, and other developmental disabilities. The BPI-S assesses aggressive/destructive, stereotyped and self-injurious behavior (SIB) in children, adolescents, and adults.  |
| Children's Scale of Hostility and Aggression: Reactive/Proactive (C-SHARP; Farmer & Aman 2009). |                       | ✓        | ✓                             | ✓           | The C-SHARP is an instrument for measuring aggressive and hostile behavior in children and adolescents with developmental disabilities. The C-SHARP includes both a Problem Scale and a Provocation Scale that measure verbal aggression, bullying, covert aggression, hostility, and physical aggression in youth.  |
| Children's Social Behavior Questionnaire (CSBQ; Hartman et al., 2006)                           |                       | ✓        | ✓                             | ✓           | The CSBQ includes separate norms for individuals with pervasive developmental disabilities and autism. Research has supported the use of the CSBQ for making differential diagnosis among children with ID. The CSBQ subscales include Social, Tuned, Understanding, Orientation, Change, and Stereotypies.  |
| Developmental Behavior Checklist-2 (DBC2; Gray et al., 2018)                                    | ✓                     |          | ✓                             | ✓           | The DBC2 was developed to screen for behavioral and emotional problems in children and adolescents with ID. The subscales include Disruptive, Self-Absorbed, Communication Disturbance, Anxiety, Autistic-Related, and Antisocial.   |
| Nisonger Child Behavior Rating Form (NCBRF; Aman et al., 1996; Tassé et al., 1996)              | ✓                     |          | ✓                             | ✓           | The NCBRF is designed to measure behavioral and emotional problems in young people with developmental disabilities. The NCBRF measures both adaptive and maladaptive behavior. The adaptive scales include Compliant/Calm and Adaptive/Social. Maladaptive subscales assess Conduct Problems, Insecurity, Hyperactivity, Self-Injury, Ritualistic Behaviors, and Sensitivity.                                    |
| Reiss Scales for Children's Dual Diagnosis (Reiss & Valenti-Hein, 1994)                         | ✓                     |          |                               |             | The Reiss Scales for Children's Dual Diagnosis is intended for use with children with ID. The scale contains 10 subscales including Anger/Self-Control, Anxiety Disorder, Attention Deficit, Autism, Conduct Disorder, Depression, Poor Self-Esteem, Psychosis, Somatoform Behavior, and Withdrawn/Isolated. It also assesses 10 rare behavior problems, for example, hallucinations, pica, enuresis/encopresis. |

|   |          |          |          |          |          |  |
|---|----------|----------|----------|----------|----------|--|
| <p>Reiss Screen for Maladaptive Behavior (RSMB; Reiss, 1988)</p>                              | <p>✓</p> |          |          | <p>✓</p> | <p>✓</p> | <p>The RSMB is designed to assess for significant mental health problems in persons with ID living in institutional and community settings. The instrument is appropriate for use with persons 16 years and older with mild, moderate, severe, and profound intellectual deficits. Domains assessed include Aggressive Behavior, Psychosis, Paranoia, Depression (Behavior Signs), Depression (Physical Signs), Dependent Personality Disorder, Avoidant Personality Disorder, and Autism.</p> |
| <p>Scale of Attention in Intellectual Disability (SAID; Freeman et al., 2015)</p>             |          | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>The SAID is designed to measure attentional capacities in children and adolescents with ID. The scales measure hyperactivity/impulsivity, inattention, and aspects of working memory.</p>   |
| <p>Questions about Behavioral Function (QABF; Matson et al., 1999a)</p>                       |          | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>The QABF is a measure designed for use when conducting a functional behavioral assessment for behavior problems in persons with developmental disabilities. The instrument yields five categories reflecting the behavioral functions of Attention, Escape, Physical, Tangible, and Nonsocial.</p>  |
| <p>Checklists</p>   |          |          |          |          |          |  |
| <p>Functional Assessment for multiple Causality (FACT; Matson et al., 2003a, b)</p>           |          | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>The FACT is a measure designed to identify the functions of maladaptive behaviors in individuals with Intellectual Disabilities. A forced-choice procedure is used to differentiate between functions for the behavior. The frequency of endorsements is used to guide behavioral planning based upon the hypothesized function of the target behaviors.</p>  |
| <p>Pervasive Developmental Disorder in Mentally Retarded Persons (PDD-MRS; Kraijer, 2006)</p> |          | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>PDD-MRS is an instrument designed to screen and classify PDD in individuals, ages 2 to 80, with ID. The PDD-MRS is organized into four categories including social interaction with adults, social interaction with peers, language and speech, and other behavior.</p>   |
| <p>Profile of Toileting Issues (POTI; Matson et al., 2010)</p>                                |          | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>✓</p> | <p>The POTI is a checklist scale designed to assess enuresis or encopresis in individuals with ID. The POTI is organized into four factors that include Toileting, Accidents, Social/Emotional Problems, and Physical Problems.</p>  |

for a number of test instruments (Brearly et al., 2017), this research base must be considered preliminary and limited in scope (Wright et al., 2020). Among the available options for digital assessments, the use of computer assisted administration and scoring systems, for example, *Q-interactive*, have received more empirical attention exploring the equivalence between digital and traditional paper-and-pencil versions of assessments (Daniel, 2012; Daniel, 2013a,b,c,d; Daniel & Wahlstrom, 2019; Daniel et al., 2014a, b; Gilbert et al., 2021; Raiford et al., 2016; Clark et al., 2017). While questions concerning validity remain (Gilbert et al., 2021), preliminary reports from practitioners using these digital assessments suggest that children and youth are more engaged and motivated during test administrations (Daniel, 2013a). The implications of using digital assessment with ID populations has yet to be explored. Future research will provide additional insight into this opportunity for practitioners to incorporate these digital assessments into their assessment batteries. However, in view of these rapid developments in the field, Table 28.5 provides a brief review of the digital assessments that are currently available for the most frequently used instruments.

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## Transition Planning Practices

Startling data on unemployment rates indicate that individuals with intellectual disabilities are more than twice as likely to be unemployed compared to the general population. Furthermore, only 44% of adults with intellectual disabilities, between the ages of 21–64, are in the workforce (Siperstein et al., 2013). There are national and state-level programs that have continuously attempted to mediate this issue over several decades with slight advancement; however, successful transition planning can play a pivotal role in addressing this societal quandary. It is well documented in the literature that effective transition involves data-driven planning (Levinson & Palmer, 2005). Thus, an evident approach to combating low employment rates among students with intellectual disabilities is to improve transition planning through the use of comprehensive assessment batteries. This section of the book chapter will briefly highlight resources and tools available to guide the transition planning process. Though, before reviewing assessment considerations, a brief discussion on federal regulations related to transition planning is warranted.

The Individuals with Disabilities Education Act (2004), requires that transition planning be initiated by school districts between the ages of 14 and 16, depending on individual state requirements, for adolescents who qualify for special education services. Federal mandates require the collection of assessment data in the areas of occupational preferences, occupational strengths, and vocational weaknesses to guide the development of transitional goals in a student's individualized educational program (IEP). As a result, psychologists and educational providers, especially school psychologists, have an obligation to assess these above transition planning constructs into their assessment batteries.

As discussed, federal legislation necessitates that student's vocational preferences be assessed when developing a transitional plan. Vocational interest assessments typically are comprised of self-reporting inventories or surveys that congregate information on students' career preferences. Once vocational predilections are identified, psychologists can use this information to assist students in generating realistic transition goals. At times, a student's career interests may not align with his or her skill sets or abilities; therefore, evaluation and consultation with the student may be needed to assist in exploring more suitable occupations (Wheman, 2013).

When a student's occupational interests are identified, a further appraisal of a student's skillsets related to vocational goals is necessary. Levinson and Palmer (2005) discussed that assessments that best measure vocational skills examine a "student's ability to perform specific job tasks and responsibilities in actual and/or contrived work environments" (p. 12). Consequently, vocational skill instru-



**Table 28.5** Digital instruments for assessing children and adolescents with intellectual disabilities

| Digital platforms   | Domain assessed                                      | Assessment instruments  |
|---|--|---|
| <p>PresenceLearning (<a href="https://presencelearning.com">https://presencelearning.com</a>)</p> <p>PresenceLearning is an online platform that includes a combination of direct student assessment, standardized assessment tools, and norm-referenced-standardized rating scales via remote testing.</p> | <p>Intellectual Ability and cognitive processing</p> | <p>Comprehensive Test of Nonverbal Intelligence, Second Edition (CTONI-2; Hammill et al., 2009a)</p> <p>Comprehensive Test of Phonological Processing, Second Edition (CTOPP-2; Wagner et al., 2013)</p> <p>Reynolds Intellectual Assessment Scale, Second Edition (RIAS-2; Reynolds &amp; Kamphaus, 2015)</p> <p>Test of Auditory Processing Skills, Third Edition (TAPS-3; Martin &amp; Brownell, 2005)</p> <p>Test of Nonverbal Intelligence, Fourth Edition (TONI-4; Brown et al., 2010a)</p> <p>Wechsler Intelligence Scale for Children – Fifth Edition (WISC-V; Wechsler, 2014)</p> <p>Woodcock-Johnson IV Test of Cognitive Abilities (WJIV COG; Schrank et al., 2014)</p>  |
| <p>Q-global (<a href="https://qglobal.pearsonclinical.com">https://qglobal.pearsonclinical.com</a>)</p> <p>Q-global is Pearson’s web-based platform for their administration, scoring, and reporting of Pearson assessments products.</p>   | <p>Vocational planning</p>                           | <p>Career Assessment Inventory – The Vocational Version (CAI; Johansson, 2003)</p> <p>Campbell Interest and Skill Survey (CISS; Campbell et al., 1992)</p> <p>Pediatric Evaluation of Disability Inventory Computer Adaptive Test (PEDI-CAT; Haley &amp; Coster, 2010)</p> <p>Vineland Adaptive Behavioral Scales, Third Edition (Vineland-3; Sparrow et al., 2016)</p>   |
|   | <p>Social, emotional, and Behavioral functioning</p> | <p>Beck Anxiety Inventory (BAI; Beck &amp; Steer, 1993)</p> <p>Beck Hopeless Scale (BHS; Beck &amp; Steer, 1988)</p> <p>Beck Depression Inventory, Second Edition (BDI-II; Beck et al., 1996)</p> <p>Beck Scale for Suicide Ideations (BSS; Beck et al., 1988)</p> <p>Beck Youth Inventories, Second Edition (BYI-2; Beck et al., 2005)</p> <p>Behavioral Assessment System for Children, Third Edition (BASC-3; Reynolds &amp; Kamphaus, 2015)</p> <p>Brief Symptom Inventory (BSI; Derogatis &amp; Spencer, 1982)</p> <p>Millon Adolescent Clinical Inventory (MACI; Millon et al., 1993)</p> <p>Millon Adolescent Personality Inventory (MAPI; Millon et al., 1982)</p> <p>Millon Clinical Multiaxial Inventory-IV (MCMI-IV; Millon et al., 2015)</p> <p>Millon Pre-Adolescent Clinical Inventory (M-PACI; Millon et al., 2005)</p> <p>Minnesota Multiphasic Personality Inventory (MMPI-A; Butcher et al., 1992)</p> <p>Minnesota Multiphasic Personality Inventory – 3 (MMPI-3; Ben-Porath &amp; Tellegen, 2020)</p> <p>Symptom Checklist-90-Revised (SCL-90-R; Derogatis &amp; Lazarus, 1994)</p> |
| <p>Q-interactive (<a href="https://qiactive.com">https://qiactive.com</a>)</p> <p>Q-interactive is a 1:1 iPad-based testing system that helps administer, score, and report direct assessment measures.</p>   | <p>Intellectual Ability and cognitive processing</p> | <p>California Verbal Learning Test, Children’s Version (CVLT-C; Delis et al., 1994)</p> <p>California Verbal Learning Test, Third Edition (CVLT-3; Delis et al., 2017)</p> <p>Clinical Evaluation of Language Fundamentals, Fifth Edition (CELF-5; Wigg et al., 2013)</p> <p>Delis-Kaplan Executive Function System (D-KEFS; Delis et al., 2001)</p> <p>Expressive Vocabulary Test, Third Edition (EVT-3; Williams, 2018)</p> <p>NEPSY; Second Edition (NEPSY-II; Korkman et al., 1998)</p> <p>Peabody Picture Vocabulary Test, Fifth Edition (PPVT-5; Dunn, 2018)</p> <p>Repeatable Battery for the Assessment of Neuropsychological Status Update (RBANS Update; Randolph, 2009)</p> <p>Wechsler Adult Intelligence Scale, Fourth Edition (WAIS-IV; Wechsler, 2008)</p> <p>Wechsler Intelligence Scale for Children, Fifth Edition (WISC-V; Wechsler, 2014)</p> <p>Wechsler Memory Scale, Fourth Edition (WMS-IV; Wechsler, 2009)</p> <p>Wechsler Preschool and Primary Scales of Intelligence, Fourth Edition (WPPSI; Wechsler, 2012)</p>  |

ments use direct observation and checklists to gauge performance. Vocational skill assessments coupled with more traditional assessment instruments, highlighted in previous sections of this book chapter, provide an extensive view of areas of strength and weaknesses. Once specific job-related skill strengths and deficits are recognized, transitional aims can be generated to mediate deficiencies through individualized academic and vocational training (Kohler & Field, 2003).

Lastly, self-determination is a construct that is under-evaluated in the transitional process. Self-determination assessments evaluate many traits and characteristics an individual may innately possess, such as one’s ability to independently self-advocate, problem-solve, set goals, self-regulate, evaluate one’s performance, etc. (Cheney, 2012; Wehmeyer, 1995). Notably, the literature reveals that minimal students engage in a leadership role in their transition planning. Moreover, students with an intellectual disability were significantly less likely than students with other disabilities to take a leadership position during transition planning meetings (Shogren & Plotner, 2012). Without adequate proficiency in this area or properly implemented accommodations to intercede limitations, students will prospectively present with many challenges in the workforce and/or post-secondary education.

Table 28.6 illustrates respected assessment instruments available to guide transition planning during the initial and progress monitoring phases. When transition assessments are specifically selected to provide a holistic perspective of a student’s interests, abilities, and needs, adequate transition plans are generated to yield favorable, long-term employment outcomes.

## Conclusions

This chapter provided an overview of the multimethod, multisource approach that is typically employed in the comprehensive assessment of children and adolescents with an intellectual disability (ID). Careful consideration of the assessment measures used to evaluate cognitive, adaptive, behavioral, emotional, and social functioning in youth with ID are important when considering diagnostic

**Table 28.6** Assessment considerations for selecting transition planning instruments

| Assessment instruments   | Constructs assessed |    |    | Assessment description   |
|--|---------------------|----|----|--|
|  | SD                  | VI | VS |  |
| ARC’s Self-Determination Scale, Adolescent Version (Wehmeyer & Kelchner, 1995) | ✓                   |    |    | The ARC’s Self-Determination Scale, Adolescent Version, is a self-report measure that assesses self-determination skills, that is, autonomy, self-regulation, psychological empowerment, and self-realization (Wehmeyer & Kelchner, 1995). |
| BRIGANCE® Transition Skills Inventory (Brigance, 2010)                         | ✓                   | ✓  | ✓  | The BRIGANCE® Transition Skills Inventory is designed to assess and support the development of transition skills related to independent living, employment, and post-secondary education (Brigance, 2010).                                 |
| Picture Interest Career Survey, Second Edition (PICS-2; Brady, 2011)           |                     | ✓  |    | Picture Interest Career Survey, Second Edition is a language-free self-report inventory used to assess vocational preference (Brady, 2011).  |
| Self-Determination Assessment Internet (Hoffman et al., 2015)                  | ✓                   |    |    | Self-Determination Assessment Internet assesses self-determination traits in the areas of cognition, behavior, and affect via online administration and scoring procedures (Hoffman et al., 2015).   |
| Transition Planning Inventory, Second Edition, (TPI-2; Clark & Patton, 2004)   | ✓                   | ✓  | ✓  | Transition Planning Inventory, Second Edition assesses an individual’s strengths, weaknesses, and preferences associated with independent living, employment, and post-secondary education (Clark & Patton, 2004).                         |

Note. SD self-determination, VI vocational interests, VS vocational skills

and treatment planning. Current diagnostic practice guidelines emphasize the importance of assessing intellectual ability and adaptive functioning to make a differential diagnosis, but practitioners should also take into consideration an investigation of etiology and comorbid mental, emotional, and behavioral disorders. The means for assessing individuals suspected of having an ID has continued to evolve in response to the available research and the demands placed on practitioners. In view of these advancements, continued education for practitioners working with this population is necessary.

Selecting, using, and interpreting assessment instruments is a complex endeavor. As illustrated throughout this chapter, ID evaluations require practitioners to reflect on a number of clinical considerations. These considerations not only assist practitioners in selecting an assessment tool that is likely to yield a valid measure of an individual's functioning but also ensure that the practitioner is using evidence-based decision-making when interpreting the findings. In closing, it is important to keep in mind that the assessment process should seldom rely solely on measurements of intellectual and adaptive functioning alone. Rather, best practice suggests that multiple methods of assessment including background information, developmental history, behavioral observations, academic achievement, and indirect measures should also be considered. By drawing upon multiple sources of information, the likelihood that the results will contribute to accurate diagnostic conclusions and meaningful intervention planning are increased.

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