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Theories, Tests, and Issues

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Assessment of Intellectual Profile
A Perspective from Multiple-Intelligences Theory

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Howard Gardner

The theory of multiple intelligences (MI) was proposed in the first edition of Frames of Mind by Howard Gardner of Harvard University and has graced our bookshelves. Nearly three decades have passed since its inception. The theory has evolved into subfields of psychology and education, including counseling psychology, developmental therapy, gifted education, programs for children, museums, theme parks, and so on, to name a few. As the book has been translated into more than 20 languages, the ideas are now spread from one continent to another and even from another. MI-inspired educational practices have made noticeable impacts in many countries and regions around the world (Chen, 2009).

An area in MI-inspired educational practice is assessment. With MI's focus on individual differences, educators need tools to help detect these differences. It is unlikely that educators will abandon effective personalized instruction without knowledge of diverse ways of learning in individual students. Also, tradition dies hard. Traditional view of intelligence as IQ is assessed by means of standardized tests. "If IQ can be measured, why can't MI be measured?" one might ask.

However, the lack of so-called "MI assessments" is not unusual. Most of them are designed to assess specific abilities and describe the intellectual profile of individuals. The quality of the instruments and the approaches to assessment vary enormously, ranging from self-reporting to observation checklists and performance-based instruments (Shearer, 2009). This chapter addresses the questions of what to assess and how to assess individual intellectual profiles from an MI-based perspective. We begin the chapter with an overview of MI theory. Moving from theory to practice, we identify several features of the MI approach to assessment of intellectual profiles. We then introduce several instruments that incorporate MI assessment features. Empirical studies based on these instruments are reported as well. Although the principles of MI assessment obtain across the age range, in this chapter we focus primarily on assessment during childhood. The chapter concludes with a discussion of the renewed significance of MI-based assessment in light of the accountability-driven movement in contemporary education.

AN OVERVIEW OF MI THEORY

A significant departure from the traditional view of intelligence as IQ, MI theory (Gardner, 1993a, 1999, 2006, 2011) presents at least three ideas that are revolutionary to our conceptualization of intelligence: definition of intelligence, methodology used to study intelligence, and identified intelligences. Growing from this revolutionary view of
Intelligences are the development and use of MI-based assessment for educational purposes.

**Definition of Intelligence**

Gardner (1999) defines intelligence as "a biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture" (p. 33). By considering intelligence a potential, Gardner asserts its emergent and responsive nature, thereby differentiating his theory from traditional ones that view human intelligence as fixed and innate. Whether a potential can be activated depends on the values of the culture in which an individual grows up; the opportunities available in that culture; and personal choices made by individuals, their families, and others in their lives. These activating forces shape the development and expression of a range of intelligences from culture to culture and from individual to individual.

Gardner's definition of intelligence also differs from other formulations in that it considers the creation of products, such as musical scores, sculptures, or computer programs, to be as important an expression of intelligence as abstract problem solving. Traditional theories do not recognize created artifacts as manifestations of intelligence and therefore are limited in both conceptualization and measurement.

**Methodology Used to Study Intelligence**

In the process of developing MI theory, Gardner considered the range of adult end states that are valued in diverse cultures around the world. To identify the abilities that support these end states, he examined empirical data from disciplines that had not been considered previously for the purpose of defining human intelligence. His examination of these datasets yielded eight criteria for identifying an intelligence. The criteria took into consideration brain function, evolutionary history, special human populations, end-state adult performances, skill training, correlation of intelligence test results, development of a symbol system, and core operations of intelligence (Gardner, 1993a). Of principal importance to Gardner in developing the criteria was capturing the range of purposes and processes entailed in human cognitive functioning.

The methodology Gardner used to develop MI theory represents a major departure from the psychological testing approach that has been used to study intelligence, and therefore has drawn great attention as well as strong criticism from the field of psychology (Gardner & Moran, 2006; Salzberg, 2006; Waterhouse, 2006). Echoing Vygotsky (1978, p. 58), we argue that "any fundamentally new approach to a scientific problem inevitably leads to new methods of investigation and analysis. The invention of new methods that are adequate to the new ways in which problems are posed requires far more than a simple modification of previously accepted methods." As radically different as MI theory is, a departure from traditional means of studying intelligence is not an option but a necessity. The distinctive methods Gardner used in studying intelligence is inseparable from his groundbreaking view of human intelligence.

**Identified Intelligences**

Gardner (1993a, 2006, 2011) has argued that standardized intelligence tests typically probe a limited number of intelligences, such as linguistic, logical—mathematical, and certain forms of spatial intelligences. MI theory has added five more candidates to the list: musical, bodily—kinesthetic, naturalistic, interpersonal, and intrapersonal intelligences. According to Gardner, all human beings possess all of the intelligences, but differ in relative strengths and weaknesses—an important source of individual differences.

The eight identified intelligences, according to Gardner, cannot be viewed merely as a group of raw computational capacities. They are subject to encoding in various symbol systems created by different cultures. It is through symbol systems that intelligences are applied in specific domains or bodies of knowledge within a culture, such as mathematics, art, basketball, and medicine (Gardner, 1993a, 1999). As well, the world is wrapped in meanings. Intelligences can be implemented only to the extent that they participate in these meanings and enable individuals to develop into functioning, symbol-using members of their community. An individual's intelligences, to a great extent, are shaped by cultural influences and refined by educational processes. It is through the process of education that "raw" intellectual capabilities are developed and individuals are prepared to assume mature cultural roles. Rich educational experiences are essential for the development of each individual's particular configuration of interests and abilities (Gardner, 1993b, 2006).
IN APPROACH TO ASSESSMENT OF INTELLECTUAL PROFILES

Assessment based on MI theory calls for a significant departure from traditional approaches to assessment. From the start, a distinctive hallmark of MI theory has been its spurning of one-shot, decontextualized, paper-and-pencil tests to rank individuals' "smartness" based on a single score (Krechevsky, 1998, 2006). MI theory presents several key principles for the assessment of intellectual profiles: (1) sampling intellectual capacities in a range of domains; (2) using media appropriate to each domain; (3) choosing assessment stimuli that are meaningful to students; (4) attending to the ecological validity of assessment settings; and (5) portraying complete intellectual profiles to support learning and teaching (Chen, 1998) (see Table 5.1).

**TABLE 5.1. MI Principles for the Assessment of Intellectual Profiles**

1. **Sample intellectual capacities in a range of domains**
   - Intellectual capacities are traditionally defined academic areas such as reading, literacy, math, and science, as well as nonacademic areas such as visual arts, physical movement, and understanding of self and others.

2. **Use media appropriate to each domain of assessment**
   - In an intelligence-fair assessment process, it is important to consider the problem-solving features and operational mechanisms of particular intelligences, which may allow one to look directly at the capacities of each intelligence.

3. **Use assessment materials that are meaningful to students**
   - Assessment materials should be engaging, thought-provoking, and inviting questions, allowing students to think critically, facilitating discovery, and encouraging the use of imagination and multiple solutions to problems.

4. **Use ecologically valid assessment settings**
   - Assessment settings should be real and ongoing, include multiple samples of student performance, and incorporate clinical judgments from those who are knowledgeable about individual assessment.

5. **Provide complete intellectual profiles**
   - Profiles should be concrete, practical, and include empirical evidence of how students understand each child's strengths and weaknesses, and then mobilize the child's strengths to achieve specific educational goals.

**Sampling Intellectual Capacities in a Gamut of Domains**

Because the fundamental principle of MI is that human intelligence is pluralistic, assessment based on MI theory incorporates a range of domains to tap different facets of each intellectual capacity. In addition to language, literacy, and mathematics—the primary focus of traditional intelligence tests and school achievement tests—MI-based assessment also looks at children's performance in areas often called nonacademic, such as music, arts, movement, and understanding of both self and others. The MI approach to assessment recognizes students who excel in linguistic and/or logical pursuits, as well as those who have cognitive and personal strengths in other intelligences. By virtue of the wider range they measure, MI types of assessment identify more students who are "smart," albeit in different ways (Gardner, 1993b, 2000).

It has been well documented that students who have trouble with some academic subjects, such as reading or math, are not necessarily inadequate in all areas (Chen, Krechevsky, & Viens, 1998; Diaz-Lefebvre, 2009; Levin, 2005). The challenge is to provide comparable opportunities for these students to demonstrate their strengths and interests. When students recognize that they are good at something, and their accomplishment is acknowledged by teachers, parents, and peers, they are far more likely to feel valued in the classroom and to experience further school success. In some instances, the sense of success in one area may make students more likely to engage in areas where they feel less comfortable. When that occurs, the systematic use of multiple measures goes beyond its initial purpose of identifying diverse cognitive abilities and becomes a means of bridging students' strengths from one area to other areas of learning (Chen et al., 1998; Dweck, 2007; Gardner, 1998).

**Using Media Appropriate to Each Domain Being Assessed**

On the basis of its contention that each intelligence exhibits particular problem-solving features and operational mechanisms, MI theory argues for intelligence-fair instruments to assess the unique capacities of each intelligence. Too often, language is the gatekeeper, forcing individuals to reveal their intelligence through the customary lens of linguistic ability; or logical analysis serves as a route to, or an obstacle thwarting, the measurement of non-
scholastic abilities. In contrast, intelligence-fair instruments engage the key abilities of particular intelligences, allowing one to look directly at the functioning of each intellectual capacity.

When intelligence-fair instruments are used, bodily intelligence can be assessed by recording how a person learns a new dance or physical exercise. To consider a person's interpersonal intelligence, it is necessary to observe how he or she interacts with and influences others in different social situations. One situation might be the individual's interacting with a friend to offer extra support when the friend loses an art contest. Another relevant situation is observing an individual giving advice to a friend who is the target of a rumor. It is important to note that what is assessed is never an intelligence in pure form. Intelligences are always expressed in the context of specific tasks, domains, and disciplines. For example, there is no "pure" spatial intelligence; instead, there is spatial intelligence as expressed in a child's puzzle solution, route finding, block building, or basketball passing (Gardner, 1993b).

Choosing Assessment Materials Meaningful to Students

Materials are important in assessment because intelligence is manifested through a wide variety of artifacts. To be meaningful, the assessment materials first need to be familiar to children. Assessment based on MI theory is responsive to the fact that students' prior experience with assessment materials directly affects their performance on tasks. For example, children who have little experience with blocks are less likely to do well on a block design task. Likewise, it would be unfair to assess a child's musical ability by asking the child to play a music instrument that he or she has never experienced. In recognition of the role that experience plays, the MI approach to assessment emphasizes using materials that are familiar to children. If children are not familiar with materials, they are given ample opportunities to explore materials prior to any formal assessment.

The term meaningful also signifies the role of assessment materials in supporting a student's problem-solving process. To be fair, materials used in many current intelligence tests, such as pictures, geometric shapes, and blocks, are not unfamiliar to children in industrial societies. Yet such materials provide little intrinsic attraction because they have little meaning in children's daily lives. For assessment to be meaningful for students, the selection of materials must be a careful and deliberate process. Materials ought to be an integral part of students' problem-solving processes, supporting thinking, inviting questions, and stimulating curiosity. Meaningful materials also facilitate students' discovery and encourage the use of imagination and multiple symbol systems (Rinaldi, 2001).

Attending to the Ecological Validity of Assessment Contexts

In the traditional intelligence assessment situation, a psychologist works with one child at a time, preferably in a relatively quiet room away from any distractions, including regular classroom activities. MI theory emphasizes the ecological validity of assessment contexts (Gardner, 1993b); that is, the assessment environments must be natural, familiar, and ongoing. When a child's ability is measured through a one-shot test using decontextualized tasks, the child's profile of abilities is often incomplete and may be distorted. In contrast, when assessment is naturally embedded in learning environments, it allows psychologists and educators to observe children's abilities in various situations over time. Such observations generate multiple samples of a child's ability that can be used to document variations of the child's performances within and across domains, and so to portray the child's intellectual profile more accurately.

Integrating authentic activities and observations over time, assessment based on MI theory does not typically function as a norm-referenced instrument does. Intelligence in the MI framework is defined as a potential, exhibiting various possible forms and subject to continuous changes in expression and strength. MI-based assessment involves performance standards or criterion references that educators can use to guide and evaluate their observations. In contrast to norm-referenced tests, which feature decontextualized and seemingly impartial judgments of students' performance, MI-based assessment is open to incorporating the clinical judgments of classroom teachers. In so doing, MI-based assessment places greater value on the experience and expertise of educators who are knowledgeable about the child being assessed and directly responsible for using the assessment results (Darling-Hammond & Ancess, 1996; Darling-Hammond & Snyder, 1992; Linn, 2000; Meisels, Bickel, Nicholson, Xue, & Atkins-Burnett, 2001; Moss, 1994).
A Portrait of Intellectual Profile in MI Theory

Portraying Complete Intellectual Profile to Support Learning and Teaching

Triangulation—of achievement, readiness, intelligence, and the like—are often used to rank order students on the basis of a single quantitative score. Seemingly objective scores on these standardized tests disguise the complex nature of human intelligence. In the process, the scores also limit the range of learning potentials and may even deny access for success in school. Instead of rank-ordering, the purpose of MI types assessment is to support students on the basis of a complete intellectual profile. Such an individual profile portrays a child's strengths, interests, and weaknesses. It also includes concrete, practical suggestions to the student, such as how weakness in the identified strengths, which are assessed on areas of targeted intervention or intervention, and develop activities that are conducive to personal growth (Kornhaber, Krechevsky, & Gardner, 1998; Shearer, 2007).

It is important to note that the identification of intellectual strengths and weaknesses in individuals is not the endpoint of MI types of assessment. The purpose of portraying a complete intellectual profile is to help educators understand each child and then mobilize his or her strengths as possible and then move him or her towards achieving specific educational goals. MI-based assessments promote achievement of these goals by assisting educators in selecting appropriate instructional strategies and pedagogical supports based on a comprehensive and individual understanding of each child.

Tools Used for the Assessment of Intellectual Profiles

Since MI theory was introduced, educators around the world have looked for an assessment that could help teachers better understand students' intellectual function and inform instructional practice. The most widely used MI-based assessments include teacher-made-based instruments, such as the Spectrum battery (Krechevsky, 1998), the Bridging assessment (Chen & McNamee, 2007), and Discovering Multicultural Strengths and Capabilities while Howard: Varied Ethnic Responses (DISCOVER; Meis, 2005). In another MI-based approach to assessment, the New City School (1994) and the McLean Community (www.6ix16.ips.k12.in.us) use student portfolios and observational checklists to capture the full range and diversity of a child's intellectual profile. Lazear (1998, 1999) uses MI-based rubrics. With the Multiple Intelligences Developmental Assessment Scales (MIDAS; Shearer, 2007), survey data are collected and supplemented with interviews. Niccolini, Alessandri, and Bilancioni (2010) have developed the Web-Observation, an online assessment instrument based on an MI framework for educators. Below we briefly describe some of these instruments, focusing on those that have been studied empirically.

The Spectrum Battery

The Spectrum battery, designed by the staff of Project Spectrum at the Harvard Graduate School of Education, is the only MI-based assessment instrument developed with Gardner's direct involvement. Designed for preschool children, the Spectrum battery is composed of 15 activities in seven domains of knowledge: language, math, music, art, social understanding, sciences, and movement. Instead of rank-ordering, the purpose of MI types assessment is to support students on the basis of a complete intellectual profile. Such an individual profile portrays a child's strengths, interests, and weaknesses. It also includes concrete, practical suggestions to the student, such as how weaknesses in the identified strengths, which are assessed on areas of targeted intervention or intervention, and develop activities that are conducive to personal growth (Kornhaber, Krechevsky, & Gardner, 1998).

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During the assessment process, an assessor or a teacher works with children either individually or in small groups. Children engage in a range of activities, such as disassembling and assembling several house gadgets in the science domain; playing Montessori bells in the music domain; keeping track of passengers getting on and off a toy bus in the mathematics domain; and manipulating figures in a scaled-down, three-dimensional replica of the children's classroom to assess social understanding. Fun and challenging, these activities invite children to engage in problem-solving tasks. They are intelligence-fair, using materials appropriate to particular domains rather than relying only on language to assess multiple forms of competence and ability. They help to tap key abilities—abilities that are essential to the operation of particular intellectual domains in children's task performance. Each activity is accompanied by written instructions for task administration. These instructions include a score sheet that identifies and describes different levels of the key abilities assessed in the activity, making a child's performance on many activities quantifiable. Finally, upon completion of each assessment activity, the child's working style during the task is recorded. Working style refers to...
the way in which a child interacts with the materials of a domain, such as degree of engagement, confidence, or attention to detail (Chen, 2004; Krechevsky, 1998).

Spectrum assessment results are presented in the form of a Profile—a narrative report based on the information obtained from the assessment process (Chen & Gardner, 2005; Krechevsky, 1998). Using nontechnical language, the report focuses on the range of cognitive abilities examined by the Spectrum battery. It describes each child's relative strengths and weaknesses in terms of that child's own capacities, and only occasionally in relation to peers. Strengths and weaknesses are described in terms of the child's performance in different content areas. For example, a child's unusual sensitivity to different kinds of music may be described in terms of facial expressions, movement, and attentiveness during and after listening to various music pieces. It is important to note that the child's intellectual profile is described not only in terms of capacities, but also in terms of the child's preferences and inclinations. Furthermore, the Profile is not a static image, but a dynamic composition that reflects a child's interests, capabilities, and experiences at a particular point in time. Changes in it are inevitable as the child's life experience changes. The conclusion of the Profile typically includes specific recommendations to parents and teachers about ways to support identified strengths and improve weak areas (Krechevsky, 1998).

Empirical studies using the Project Spectrum materials have been revealing. In one study, Adams (1993) assessed 42 preschool children with a modified Spectrum battery and found that each individual's pattern of performance was highly likely to be distinct when a diverse set of abilities was measured. In another study, the staff of Project Spectrum worked with four first-grade classrooms in two local public schools (Chen & Gardner, 2005). The majority of students in these classrooms who had been identified as at risk for school failure (13 out of 15) demonstrated identifiable strengths on the Spectrum assessment. Also noteworthy, these students showed more strengths in nonacademic areas (such as mechanical, movement, and visual arts) than in academic areas (such as language and math). Had the assessment been limited to academic areas, these at-risk children's strengths would have gone undetected and could not have served as bridges for extending the children's interest and learning to other curricular areas. Most recently, Castejon, Perez, and Gilar (2010) studied 393 children 4–7 years of age in five cities in Spain, using six Spectrum activities. They tested four models of the structure of intelligence including a model with six uncorrelated factors and a model with one general cognitive factor. The results did not favor any one particular model or theory. On the one hand, results indicated that individual Spectrum tasks do tap abilities other than g; on the other hand, they are not so separate from general abilities as proposed by the original authors (Castejon, Perez, & Gilar, 2010, p. 494).

**Bridging**

Bridging was developed by Chen and McNamee (2007) to help teachers portray intellectual profiles of children between the ages of 3 and 8. It has certain features with the Spectrum assessment including the identification of children's diverse cognitive strengths, the use of engaging activities, and a focus on guided observation and careful documentation. It differs from the Spectrum assessment by focusing on the operation of intellectual abilities in school curricular areas, such as language and literacy, number sense and geometry, physical and mechanical and natural sciences, performing and visual arts. Bridging is organized in terms of school subject areas rather than intellectual domains, for several reasons: (1) Intelligences are a function in abstract form, but rather are used in the context of specific disciplinary tasks; (2) school subject areas reflect intellectual abilities valued in our society; (3) children mobilize their intelligences in the pursuit of studying subject areas; and (4) aligning assessment areas with school subject areas facilitates teachers' incorporation of the assessment results into curriculum planning. The name of the instrument, Bridging, signifies its purpose of building a bridge from assessment to teaching (Chen & McNamee, 2008).

Bridging includes a total of 15 regular classroom activities, such as reading a child's favorite book, constructing a model car with recycle materials, and experimenting with light and shadows (for a detailed description of Bridging, see Chen & McNamee, 2007). Children's performance in each of the 15 activities is scored according to a 10-level criterion-referenced rubric developed specifically for 3- to 8-year-olds. As an example, the rubric used to measure performance on the "reading books" activity was based on the stages of reading developed by Sulzby (1985) and work...
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...years of age in reading activities. Their use involves intelligence, interrelated factors, and the specific factor or factors that are unique for each individual. In one particular study, results indicate that tasks do tap into a variety of skills. On the other hand, they are used to assess various abilities as proposed by Perez, et al.

Chen and McNamee (2006) describe intellectual profiles for individual students. The MIDAS is an assessment tool that measures the specific skills, capacities, and enthusiasms of each child in a particular activity. The MIDAS results are used to design individualized instruction and curriculum for students. The MIDAS has four forms: Adult (19+), Teen (ages 15–18), All About Me (ages 9–14), and My Young Child (ages 4–8, parent report). The MIDAS profile consists of eight main scales and 26 subscales that describe the respondent's specific skills, capacities, and enthusiasms in each of the eight intellectual domains defined by Gardner (1993a). Responding to the criticism that the MIDAS results are questionable because they rely primarily on self-report, Shearer (2007) argues that one of the hallmarks of the MIDAS is attention to the intrapersonal intelligence reflected in the self-report process and profile interpretation. For the MIDAS, intrapersonal intelligence is the "royal road to learning, achievement, and personal growth" (Shearer, 2007).

The MIDAS has been translated into numerous foreign languages for use in countries such as Korea, Malaysia, Taiwan, Iran, Singapore, Ireland, and Chile. It has also been tested for its psychometric properties in the United States as well as internationally, including test–retest reliability, interrater reliability, concurrent validity, and level of independence among scales (Shearer, 2007). In an analysis of 23,000 individuals who completed the MIDAS profile, for example, Shearer (2005) found reading by Fountas and Pinnell (1996). The Bridging approach—developing conceptualization of children's abilities and the effective design of its assessment activities—underlying the current study using Bridging, Chen, McNamee, and Chen (2012) examined the intellectual profiles of 75 pre-service and kindergarten children. Results indicated that within a child's profile, levels of competence varied as a function of content area. A child's competence level was higher in some areas and lower in others. Among children's profiles, the proportion of their performance levels were distinctive. That is, the pattern in each child's profile deviated from the pattern found in other children's profiles. Children's competence is thus domain-specific, which are their approaches to learning, as indicated in another study by Chen and McNamee (2005). Sixty-one children from preschool to second grade participated in the study. The results revealed that children's approaches to learning are not static traits found within an individual child, but a profile of tendencies describing the interaction of child, content, and task.

In terms of Bridging's utility, over 400 preschool and inservice teachers from preschool through third grade have integrated it in their classrooms under the direct supervision of the instrument developers. An implementation study of 75 pre-service teachers revealed that the construction of intellectual profiles for individual students using the Bridging assessment process was a key component in student teachers' understanding of diverse learners in their classrooms (Chen & McNamee, 2006). In another study, McNamee and Chen (2005) reported that teachers' understanding of individual students and content knowledge increased as the result of implementing Bridging in their classrooms. This increased understanding contributed to their ability to be more effective in curriculum planning and teaching.

The MIDAS and DISCOVER Assessments

Among the many MI-inspired assessments that others have designed independently, we describe two: the MIDAS and DISCOVER. Empirical data are reported for both instruments and both involve diverse populations. The MIDAS is designed to portray the profile of an individual's intellectual dispositions, based primarily on responses to a set of survey questions (Shearer, 2007; www.MIResearch.org). The MIDAS has four forms: Adult (19+), Teen (ages 15–18), All About Me (ages 9–14), and My Young Child (ages 4–8, parent report). The MIDAS profile consists of eight main scales and 26 subscales that describe the respondent's specific skills, capacities, and enthusiasms in each of the eight intellectual domains defined by Gardner (1993a). Responding to the criticism that the MIDAS results are questionable because they rely primarily on self-report, Shearer (2007) argues that one of the hallmarks of the MIDAS is attention to the intrapersonal intelligence reflected in the self-report process and profile interpretation. For the MIDAS, intrapersonal intelligence is the "royal road to learning, achievement, and personal growth" (Shearer, 2007).

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found nine factors corresponding with the MIDAS main scale. He thus concluded that the MIDAS provides a reasonable estimate of the respondents' multiple intellectual dispositions.

The MIDAS has been used with diverse populations, including elementary, secondary, and university students, students with attention-deficit/hyperactivity disorder (ADHD) and learning disabilities; and adults seeking career help. In studies of 116 elementary children diagnosed with ADHD, for example, Shearer and colleagues found that, compared to typically developing peers, these students scored lower on the math, linguistic, and intrapersonal scales of the MIDAS, but higher on the naturalist, spatial and kinesthetic scales (Proulx-Schirduan, Shearer, & Case, 2009). The MIDAS profile provided a unique description of the students with ADHD, whose interests and strengths included artistic design, craft work, and recognizing different kinds of plants.

Another observation-based assessment in the spirit of MI theory is DISCOVER (Maker, 2005; www.discover.arizona.edu). Designed for the identification of gifted and talented students, the DISCOVER assessment focuses on a broad spectrum of problem-solving strategies in seven intellectual domains: spatial artistic, spatial analytical, logical mathematical, oral linguistic, written linguistic, interpersonal, and intrapersonal. During the DISCOVER assessment process, students participate in a series of active problem-solving exercises, using playful, age-appropriate materials. While students engage in a problem-solving process, trained and certified individuals observe, document, and rate the students' behavior, focusing on the problem-solving strategies they are using. The information is later compiled to produce "strength profiles" that summarize and interpret the assessment results. The DISCOVER assessment includes a total of seven different forms designed to accommodate age groups from preschoolers to adults.

The DISCOVER assessment has been used by a network of international partners from China, France, Hong Kong, Taiwan, Thailand, Saudi Arabia, and Egypt. Educators in these locations are eager to adapt the effective problem-solving strategies identified by DISCOVER to fit local contexts in their regions. Maker's work with Native American groups in the United States is particularly revealing. In a number of studies, Maker and her colleagues (Maker & Sarouphim, 2009; Sarouphim, 2004) found that children from these indigenous cultures are particularly apt at spatial tasks, artistic abilities, and observational skills. Such strengths, however, are largely overlooked in the traditional assessment of gifted and talented students. With the DISCOVER assessment, more forms of giftedness can be identified, valued, and promoted.

RENEWED SIGNIFICANCE OF THE MI APPROACH TO ASSESSMENT

The testing of intelligence can be dated back to the beginning of the 20th century. Over a century later, many psychologists still adhere to the view of intelligence as a single, general faculty that can be accurately measured through norm-referenced, standardized intelligence tests. This view permeates our practice of education, including how we assess children and evaluate schools. As indicated before, the inappropriateness and danger of using one-shot, standardized tests to assess children's learning and achievement are considerable. Such tests sample only a small portion of children's intellectual abilities, typically their achievement in math and reading. Because a standard intelligence test ignores the wide range of abilities needed by society, it does little to help us recognize and nurture individuals' potentials. Furthermore, these tests categorize children on the basis of a single score. Children can be identified as "gifted" or "at risk for school failure." Both labels can be assigned at a very early age, affecting the remainder of a child's school career and beyond.

The possibility that an at-risk child has strengths in other areas is not considered relevant. The belief in general intelligence drives not only the educational practice of standardized achievement testing, but also the more recent initiatives in school accountability. Students' mean scores on standardized tests are now used to rate schools. Some schools become exemplars; many more fall along a straight line between adequate performance and probationary status; some schools suffer penalties. Using standardized test scores to rate schools is problematic for the same reasons that using them is inappropriate for students. A mean score is a single number. It does not capture the full range of what a school achieves in a year. The successes that a school has can be hidden or obscured. As with individual students, mean test scores are practical for rank ordering, but they do little to help identify the strengths of a school. The
Integration of multiple intelligences as the basis for creating a growing snowball of ideas. Schools and children, parents from low-income and minority are losing traction. At every level in human strengths are overlooked, and narrowly defined. With education limited vision and teaching to theory has a renewed significance. Attention one more time to diversity, and multiple potentials for growth. Education for moving beyond the current definition of intelligence. It points the way to a new assessment that will integrate curriculum, and instruction.

MI theory, the primary purpose of assessment is to gather information about individual capabilities, upended to describe differences among individuals, and integrate assessment that will integrate curriculum, and instruction.

The learning profile: A construct to understand learning and development of the whole child in content areas. International Early Learning Journal, 13(1), 71-78.


