PEABODY JOURNAL OF EDUCATION, 77(2), 23–39


# Pieces of the Puzzle: Measuring the Personal Competence and Support Needs of Persons With Intellectual Disabilities

*James R. Thompson*
*Department of Special Education*
*Illinois State University*

*Kevin S. McGrew and Robert H. Bruininks*
*Department of Special Education*
*University of Minnesota*

Theoretical and empirical efforts to develop valid methods by which to identify people with mental retardation and related disabilities have been underway for approximately 100 years. Recently, there is a growing consensus that mental retardation is best conceptualized as significant limitations in the multidimensional construct of personal competence. In addition to physical competence, personal competence is conceptualized to include, at the broadest level of conceptualization, the domains of conceptual, practical, and social intelligence. Due to limitations in personal competence, the defining characteristic of persons with mental retardation is an ongoing need for types and intensities of support that most others in society do not require. Current models of personal competence are described and the types of measurement tools available to measure essential dimensions of personal

Requests for reprints should be sent to Jim Thompson, Associate Professor and Interim Chair, Department of Special Education, Illinois State University—Mail Code 5910, Normal, IL 61790–5910.

competence are discussed. Additionally, a systematic approach is described for assessing support needs and developing plans to meet these needs.

There is only one reality in psychology—the reality of individual differences. No two people are the same. People differ on physical, personality, and intellectual characteristics, and in a myriad of other ways. Individual differences make each person unique and provide for a diverse, heterogeneous society.

Individuals with advanced intellectual abilities are said to be *gifted* and in extreme cases are referred to as *geniuses.* Conversely, individuals who cannot complete common everyday cognitive tasks, or who can only complete them with partial success, are often said to be individuals with *mental retardation, cognitive delays,* or *intellectual disabilities.*

In this article, we examine issues pertaining to the identification and support needs of people with intellectual disabilities. Specifically, we (a) contend that there are compelling reasons to continue theoretical and empirically validated efforts to develop more reliable and valid methods by which to identify people with mental retardation, (b) review the historical evolution of the concept of mental retardation and the corresponding efforts to measure its critical dimensions, (c) propose that future conceptualizations of mental retardation be based on a multidimensional construct of personal competence, (d) present the need for valid instruments to measure key dimensions of personal competence, (e) propose that the focal point of service delivery systems should be on identifying and securing the supports that people with mental retardation need to experience an enjoyable quality of life, and (f) describe initial efforts to systematically measure individual support needs and develop individualized support plans.

## Is It Justifiable to Identify People With Mental Retardation?

Prior to considering how to best identify people with mental retardation, it is critical to determine whether such an endeavor is justifiable. Ysseldyke, Algozzine, and Thurlow (1992) have made the point that disability categories are social constructions in that they are

> constructs given meaning and life through comparison of performance to criteria. Blindness is a name assigned to visual performance judged different from that called average or normal. Giftedness and mental retardation are names assigned to intellectual performance judged different from that called average or normal. Criteria accepted as evidence

> for a condition form the cornerstones of a definition. Definition is the cornerstone for the existence of a condition. For all practical purposes, without definitions there are no categories. (p. 92)

Formal efforts to identify and differentiate people as a function of their lack of intellectual abilities and skills have been characterized by some as misguided due to the potential unintended effects of negative stereotypes and resultant discrimination (Danforth, 1997; Kliewer & Biklen, 1996). For example, in examining special education through a postmodernist lens, Danforth concluded that learning differences become artificially overstated through the use of disability categories. His position is that it is wrong to perpetuate a belief that "certain persons in society have a deficit condition called 'mental retardation' that requires professional intervention" (p. 99–100) and implies that if all children were viewed only as individual learners their needs would be accommodated by educators as a matter of course. According to Danforth, diagnosis is when "a child's social identity is quickly refashioned from 'normal' status to debilitated learner" (p. 101).

However, the dominant thinking in the fields of special education and mental retardation assumes that there are certain individuals within the population who need special assistance for improved learning and cultural adaptation. If not identified, they would be unable to receive the necessary education and other supports needed to reach their full potential. Although disability labels have the potential to adversely impact an individual, the bottom line is that "it is simply a logical impossibility to talk about students as having special needs without labeling them as having special needs" (Hockenbury, Kauffman, & Hallahan, 1999–2000, p. 5). Proponents of identification suggest that a person's difficulties in school achievement, learning, work, or community living are the true source of any *stigma,* and the benefits derived from special assistance outweighs any costs associated with the disability label (e.g., Kauffman, 1999; Lewis, Bruininks, Thurlow, & McGrew, 1989).

Our position is that the challenges people with mental retardation face on a daily basis are real and will not disappear if they were no longer identified as people with mental retardation. Because we believe that mental retardation is real, we endorse efforts to improve methods of identification that lead to effective interventions to increase learning and adaptation. Moreover, we believe it is essential to identify individuals with mental retardation so (a) they can receive services and supports that will enable them to live productive and fulfilling lives, (b) they can be legally protected from unfair treatment or exploitation, and (c) systematic research can be conducted that will yield knowledge that will ultimately lead to better systems of learning and support.

## Personal Competence as the Defining Feature of Mental Retardation

Definitions of mental retardation have changed over time. Because "definition is the cornerstone for the existence of a condition" (Ysseldyke et al., 1992, p. 92), every time there is a change in the definition of mental retardation, there is a corresponding change in the population of persons with mental retardation. People who meet criteria under one definition may not meet criteria under a revised one.

The history of defining mental retardation is instructive. Our study of this history has led us to the conclusion that mental retardation should be conceptualized as significant limitations in the conceptual, practical, and social dimensions of personal competence that creates a need for types of support that most others in society do not need. This conceptualization of mental retardation is largely consistent with previous conceptualizations offered by Greenspan (1999b), the American Association on Mental Retardation's Ad Hoc Committee on Terminology and Classification (Luckasson et al., 2002), and Schalock (2002). We predict that a multidimensional approach to personal competence and a focus on identifying support needs will characterize formal definitions of mental retardation in the coming years.

### *The Prominence of Personal Competence in Early Conceptualizations of Mental Retardation*

Early pioneers in the field of mental retardation (e.g., Itard, Seguin, Voison, and Howe) characterized people with mental retardation as being vulnerable and lacking personal independence due to deficits in social competency and a lack of practical skills needed to successfully adapt to the environment (Nihira, 1999). Moreover, early legal definitions of mental retardation emphasized deficits in community adaptation (Bruininks, Thurlow, & Gilman, 1987). Although tools to assess personal independence, social competence, practical skills, and community adaptation were not available to these early scholars beyond acute observation, it was clear that as the field of mental retardation began to emerge, there was initial consensus that people with mental retardation were different than others due to a significant difficulty in dealing with the demands of a complex world. Personal competence was, in many respects, the cornerstone of early definitions of mental retardation.

### *IQ Rises to Prominence*

The introduction of Binet's intelligence test and the subsequent expansion of the intelligence testing movement during the early 1900s shifted attention away from indicators of the broad construct of personal competence to an exaggerated focus on IQ scores. Since it was assumed that people with mental retardation were different from the rest of the population by virtue of deficient intellectual functioning, the intelligence quotient was perceived as an objective and practical tool. The IQ test provided an efficient means by which to provide a clear and concrete indication of the degree an individual deviated from the general population (Scheerenberger, 1983; Smith, 1998). However, concerns over the narrowness of the behaviors sampled by IQ tests soon arose (e.g., see Doll, 1936; Tredgold, 1922) and eventually a steady stream of critiques led to efforts to broaden the assessment of behaviors in defining mental retardation (Scheerenberger, 1983).

### *Adaptive Behavior Comes on Board*

Of the numerous definitions of mental retardation that emerged during the first half of the 20th century, Edgar Doll's 1941 definition had the most enduring impact. Doll indicated that the following six criteria were essential to understanding mental retardation: "(1) social incompetence, (2) due to mental subnormality, (3) which has been developmentally arrested, (4) which obtains at maturity, (5) is of constitutional origin, and (6) is essentially incurable" (Doll, 1941, p. 215). Smith (1998) pointed out that Doll's first four criteria have stood the test of time, but the last two have not. It is now widely recognized that environmental variables can contribute to delayed development and lower personal competence (Baumeister, Kupstas, & Woodley-Zanthos, 1993). Additionally, it is possible for an individual to achieve a level of personal competence where he or she is no longer significantly different from the rest of society to warrant a diagnosis of mental retardation (Luckasson et al., 2002). However, Doll was a visionary in that he understood the fundamental role the construct of social intelligence should play in the definition of mental retardation. For the past 25 years Stephen Greenspan and others have expanded Doll's construct of social intelligence in exploring the meaning of mental retardation. Greenspan has argued convincingly that components of personal competence associated with social intelligence have been overlooked in definitions of mental retardation (Greenspan, 1979; Greenspan & Driscoll, 1997; Greenspan & Granfield, 1992).

By the late 1950s, Doll and others had built a strong case against using the IQ score as the sole indicator of mental retardation. It was obvious that IQ tests were measures of certain circumscribed aspects of cognitive functioning related to academic tasks (i.e., linguistic, conceptual, and mathematical abilities and skills) that did not tap other aspects of personal competence that are essential for independent functioning (e.g., social intelligence and practical intelligence). Diagnostic decisions based exclusively on an IQ score ran the risk of being misguided due to insufficient information. In 1959, the American Association on Mental Deficiency (now known as the American Association on Mental Retardation, or AAMR) published a revised definition that specifically included deficits in adaptive behavior as a second criterion for the diagnosis of mental retardation (Heber, 1959). Intellectual functioning (as measured by IQ tests) and adaptive behavior (as measured by adaptive behavior scales) remain the two central features of definitions of mental retardation today (e.g., state and federal governmental definitions, international definitions, and definitions published by professional organizations).

From its introduction, the construct of adaptive behavior has been a source of considerable controversy. Adaptive behavior scales were generally applauded for their value in identifying explicit competencies of individuals with mental retardation in observable and measurable terms as such information was very useful when developing individualized educational and habilitation goals (Nihira, 1999). However, the usefulness of adaptive behavior scales in measuring broad aspects of personal competence has been questioned. For example, after more than a decade of including adaptive behavior criteria in definitions of mental retardation, Clausen (1972) claimed that the determination of mental retardation continued to be based almost exclusively on intelligence tests.

We believe that the fundamental problem that has plagued the development of adaptive behavior scales has been the absence of a consensual theoretical definition of the construct to be measured (i.e., adaptive behavior). Greenspan (1997) indicated that the construct of adaptive behavior "was devised in the absence of a model of competence; as a consequence it was operationally defined as a mishmash of practical intelligence (activities of daily living) and absence of psychopathology (good affective competence)" (pp. 140–141). Coulter and Morrow (1978) compared 10 definitions of adaptive behavior published between 1968 and 1976 and noted that no 2 definitions were alike (although there were similarities between many of the definitions). The plethora of different behavior scales that emerged throughout the 1970s and 1980s

increased confusion over what exactly it was that adaptive behavior scales were measuring. Zigler, Balla, and Hodapp (1984) concluded that adaptive behavior was a meaningless construct because it was so unclear; they argued for a return to an IQ-only definition of mental retardation.

To better understand adaptive behavior, several researchers initiated factor analytic studies in an effort to identify and define the key dimensions (i.e., factors) of the construct (e.g., see Bruininks, McGrew, & Maruyama, 1988; Matson, Epstein, & Cullinan, 1984; Owens & Bowling, 1970; Sparrow & Cicchetti, 1978). In a review of 31 published factor analytic studies (reporting data from 86 independent samples and 9 different scales), Thompson, McGrew, and Bruininks (1999) concluded that adaptive behavior, as collectively measured by existing instruments, is a multidimensional construct that appears to consist of 5 broad domains of behavior, namely, personal independence, responsibility, cognitive/academic, physical/developmental, and vocational/community. Additionally, Thompson et al. concluded that no single adaptive behavior measurement scale comprehensively measured the entire range of adaptive behavior dimensions (e.g., 7 scales provided measures of personal independence but only 4 scales provided measures of social responsibility). Although this review, in conjunction with earlier reviews (see Meyers, Nirhira, & Zetlin, 1979; McGrew & Bruininks, 1989; Widaman, Borthwick-Duffy, & Little, 1991; Widaman & McGrew, 1996) helped clarify the factor structure adaptive behavior, the reviews also confirmed the definitional confusion that surrounds this construct. As a result, there are a plethora of adaptive behavior scales on the market today that measure many different things.

The AAMR's 1992 definition and classification manual (Luckasson et al., 1992) added further complexity to the debate over the meaning of adaptive behavior. In the 1992 AAMR manual, adaptive behavior was defined as consisting of 10 specific adaptive skill areas (communication, self-care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure, and work). Moreover, the operational criterion for identifying mental retardation was the presence of limitations in 2 or more skill areas. Critics charged that the 10 areas of adaptive skills lacked theoretical and empirical justification and that there were no tools to assess all 10 areas at the time the 1992 manual was published (Jacobson & Mulik, 1992; MacMillan, Gresham, & Siperstein, 1993). These criticisms, plus others, resulted in Greenspan (1997) concluding that the 1992 AAMR manual "should be declared an honorable mistake and given a decent burial" (p. 179).

*Personal Competence Rises Again*

Although AAMR's 1992 manual (Luckason et al., 1992) had its detractors, certain aspects of the manual offered promise for a more comprehensive and functional conceptualization of mental retardation. For example, although the 10 adaptive skill areas may have lacked empirical validity, this top-10 skill list did focus much needed attention on a broader multidimensional notion of personal competence and adaptive behavior. Also, in the section of the 1992 AAMR manual where the theoretical groundwork for the new definition was presented, the importance of describing personal capabilities within a theory of general competence was stressed. McGrew, Bruininks, and Johnson (1996) and Greenspan (1997), however, brought attention to the fact that the actual operational definition and criteria outlined in the 1992 AAMR model was not aligned with any models of personal competence. There was an obvious disconnect between the stated importance of a theoretical model of personal competence and the resultant operational definition and criteria in the 1992 AAMR manual.

The AAMR's most recent definition and classification manual (Luckasson et al., 2002) moves even further toward defining and conceptualizing mental retardation as limitations in the multidimensional construct of personal competence. The 2002 definition is that "mental retardation is a disability characterized by significant limitations both in intellectual functioning and in conceptual, social, and practical adaptive skills. This disability originates before age 18" (p. 1). The authors indicate that intellectual functioning is still best represented by IQ scores when obtained from appropriate assessment instruments and adaptive behavior encompasses the application of conceptual, social, and practical skills to daily life.

Although the 2002 AAMR definition retains the two traditional criteria for diagnosis of mental retardation (i.e., intelligence and adaptive behavior), three different dimensions of personal competence appear to be emerging as the cornerstone of the definition and criteria for diagnosing mental retardation: conceptual intelligence, social intelligence, and practical intelligence. While these terms are not explicitly defined in the 2002 AAMR manual, conceptual intelligence has traditionally referred to abstract intellectual abilities needed to understand symbolic processes (e.g., language) and to master academic or analytic tasks (Greenspan & Granfield, 1992; Greenspan & Driscoll, 1997; McGrew et al., 1996; Schalock, 2002). Skill indicators of conceptual intelligence include receptive and expressive language, reading and writing skills, and mathematical skills (Shalock, 2002). Social intelligence has typically been defined as

"a person's ability to understand and to deal effectively with social and interpersonal objects and events" (Greenspan, 1979, p. 483) and includes interpersonal and social skills. Examples of social and interpersonal competency skill indicators are forming and maintaining friendships, participating in group activities, responsibility, and sensitivity and insight (Schalock, 2002). Finally, *practical intelligence* has been described as "the ability to deal with the physical and mechanical aspects of life" (Greenspan, 1979, p. 510) and includes self-maintenance, daily living competencies, vocational activities, and recreational and leisure activities (Greenspan, 1981; Schalock, 2002). Some potential skill indicators of practical intelligence are self-help skills, daily living skills, community living skills, and occupational skills (Schalock, 2002).

The focus on personal competence in the new AAMR definition appears to be more consistent with available models of personal competence than past definitions. Greenspan and Driscoll (1997) recently presented a revised personal competence model comprised of four dimensions: physical competence, affective competence, everyday competence, and academic competence. Each of these domains was further subdivided into eight subdomains. The authors indicate that each of the subdomains could be further broken down into more discrete elements. Thus, the Greenspan and Driscoll model can be considered to be a hierarchical model with several strata.

### *Measuring Personal Competence*

Figure 1 shows an adapted model of personal competence similar to Greenspan's earlier models (Greenspan, 1979, 1981; Greenspan & Granfield, 1992) and is generally consistent with AAMR's 2002 definition and classification system. In addition, this figure reflects a recent attempt to map the theoretical domain of personal competence to the available instruments in the measurement domain (McGrew, 2001). It is important to note that although physical intelligence would not be related to a definition of mental retardation, it would be important to consider it when assessing an individual's overall level of personal competence.[1] If people with mental retardation are to be assessed on the basis of personal competence, it is essential that the field have access to reliable and valid mea-

[1]The use of the terms *physical* and *intelligence* in the same phrase may sound unusual but is conceptually similar to Gardner's (1993) notion of bodily–kinesthetic intelligence, which consists of those physical competencies that are probably enhanced in individuals in professions such as dance and sports.

sures of the critical dimensions. Unfortunately, current instrumentation lags behind current need.

As suggested by Thompson et al. (1999), the necessary measurement domain tools required to adequately assess a person's abilities and competencies (as they relate to an evolving definition of mental retardation) may require the use of direct tests that measure traits (e.g., memory)

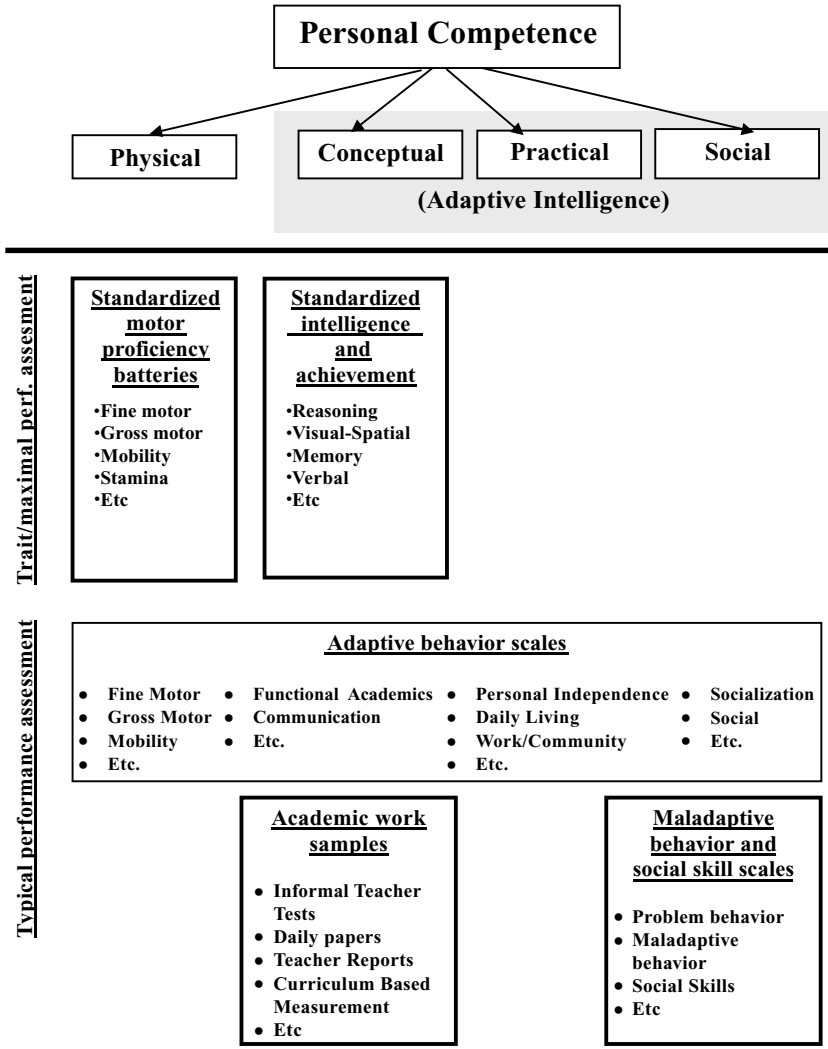


*Figure 1.* Dimensions and potential measures of personal competence.

under maximal performance conditions as well as indirect and largely third-party checklists or rating skills of typical performance. It is clear in Figure 1 that assessment technology currently exists for directly measuring conceptual intelligence (e.g., Woodcock–Johnson III Battery; Wechsler batteries; standardized achievement batteries). In addition, indicators of typical conceptual performance (e.g., reading performance in the classroom or in an employment setting) can be gleaned from functional academic scales from many current adaptive behavior scales. In addition, informal work samples, curriculum-based measures, and teacher or supervisor reports can provide additional indirect information regarding a person's typical performance in a variety of the conceptual intelligence subdomains.

In the theoretical–measurement domain mapping illustrated in Figure 1, current adaptive behavior scales are considered to provide indications of typical performance across the four major domains of personal competence. This conceptualization recognizes that adaptive behavior, as operationalized by today's scales, does not measure a trait (or set of traits). Rather, adaptive behavior scales provide indirect indicators of typical performance across personal competence domains. Hopefully this recognition will result in improvements in revised and yet-to-be developed measures of adaptive behavior. This recognition also suggests that the field may want to consider dropping the term *adaptive behavior* in favor of a more descriptive term (e.g., typical competence behavior or everyday competence). Similarly, the maladaptive sections of many adaptive behavior scales, as well as available social skills rating scales, can be considered as indicators of typical and atypical social functioning.

The most important information gleaned from Figure 1 is the conclusion that there is a critical lack of reliable and valid instrumentation in the direct/maximal performance domains of practical and social intelligence (McGrew, 2001). Despite decades of attempts to develop direct tests of social intelligence or social awareness, no individually administered and nationally standardized test (or battery of tests) of this construct domain has emerged (Greenspan, 1999a). The practical intelligence direct measurement domain is even less advanced, with serious research in this area currently being in a state of infancy (Wagner, 1994). Recent practical intelligence research on the development of direct measures of *tacit knowledge* (practical domain-specific know-how knowledge) offers some encouragement in this domain (Wagner, 1994).

Clearly, if a personal competence model-driven assessment practice is to realize its potential to improve the identification and classification of people with mental retardation, significant strides must be made in the development of new assessment technology. Direct measures of practical

and social intelligence are sorely needed. Possibly, the innovative use of CD-ROM-based standardized vignettes (administered via computer screens) of everyday practical problem-solving and social situations may hold the key to reliable and valid measurement of the constructs of practical and social intelligence. Additionally, as current adaptive scales are revised, and/or as new scales are developed, we encourage those involved to recognize that these scales are not intended to measure a single thing or construct within a person. Rather, items and scales need to be constructed that provide for the best breadth of sampling of a person's typical functioning across physical, conceptual, practical, and social intelligence domains.

## From Personal Competence to Support Needs

A major contribution of the 1992 and 2002 AAMR Definition and Classification manuals (Luckasson et al., 1992, 2002) was the emphasis placed on conceptualizing mental retardation as an expression of the interaction between what a person can do and what the environment demands. That is, mental retardation is evidenced when a person's level of *personal competence* does not enable him or her to perform the tasks that his or her environment requires for successful functioning. This interactionist, or *person–environment fit,* orientation provides for a more functional conceptualization of mental retardation than a traditional trait orientation (i.e., mental retardation is a trait within the person). The emphasis on the person–environment interaction leads to a focus on identifying the types of support a person needs to be successful in typical, everyday life settings. Such supports are intended to reduce or eliminate the mismatch between environmental demands and a person's current level of skills. This perspective also assumes that human performance is influenced and can be improved through designing environments that accommodate a diverse range of abilities and needs (e.g., incorporating principles of universal design into the design of buildings, living environments, recreational facilities, and so on) (Steinfeld & Danford, 1999).

### *A Systematic Approach to Support Needs Assessment and Planning*

Thompson, Hughes, et al. (2002) define supports as "resources and strategies that promote the interests and welfare of individuals and that result in enhanced personal independence and productivity, greater par-

ticipation in an interdependent society, increased community integration, and/or an improved quality of life" (p. 3). These authors propose a four-component approach for determining support needs and developing plans to meet these needs. The four components are as follows: (a) identifying a person's desired life experiences and goals, (b) determining an individual's intensity of support needs across a wide range of environments and activities, (c) developing an individualized support plan, and (d) monitoring outcomes and assessing the effectiveness of the plan.

To complete the first component, a person-centered planning process (e.g., Butterworth et al., 1993; Mount & Zwernik, 1988) is needed to identify any discrepancies between an individual's current life experiences and conditions and his or her preferred or desired life experiences and conditions. This process involves the consideration of the need to maintain or change a person's life experiences as well as a prioritization of desired outcomes (Thompson, Hughes, et al., 2002).

The second component entails a formal assessment process specifying the general characteristics of a person's support needs. This is accomplished in parallel with or shortly after person-centered planning (i.e., component 1) and should reflect the frequency and duration of specific types of needed supports. Also, a comprehensive assessment of the sources of support that are currently available to a person must be considered. Collectively, this information should provide an adequate and objective set of data from which to identify the intensity of individual support needs and provide guidance for the developing of an Individualized Support Plan (ISP). A scale for measuring an individual's support needs, the Support Intensity Scale (SIS), was recently developed by Thompson, Bryant, et al. (2002). Although the SIS is still in the field test stage of development, results from a preliminary field test of an earlier version of the scale are encouraging (Thompson, Hughes, et al., 2002).

The third component requires the development of an ISP where the sources of support are identified based on a team process that considers resource and service availability or practicality. The fourth component entails follow-up and monitoring of an individual's quality of life and the implementation of the ISP. A key aspect of the fourth component is the planning team's examination of the progress that was made in assisting the individual in realizing the desired conditions and experiences that were specified during person-centered planning. Also, it is important for the planning team to determine whether the conditions and experiences originally specified as priorities should be maintained or revised. Finally, an assessment of the extent to which the ISP was actually implemented is required.

Time will tell whether or not the four-component process described by Thompson, Hughes, et al. (2002) makes a lasting contribution to the

assessment and planning of support needs. Support needs is a slippery construct that makes developing specific procedures for systematically identifying the support needs of individuals a challenging task. However, a person–environment fit orientation to mental retardation renders the need for support the definitive characteristic of persons with mental retardation. Therefore, it is imperative that efforts to develop reliable measures of support needs are undertaken.

## Conclusion

Historical attempts to define mental retardation have typically emphasized important aspects of personal and social competence and aspects of the environment (cf. Davies, 1959; Scheerenberger, 1983). While these emphases in definitions of intellectual disability have drawn criticism, even a casual review of research during the past 100 years attests to the powerful influence of these constructs on defining, understanding, and supporting persons with mental retardation. The continuing development and refinement of measurement, the refinement of conceptual models of development and adaptation, and the advancement of statistical modeling are leading to the conclusion that personal competence and features of environment play a profound role in identifying people with mental retardation and in providing them with necessary support.

The seminal contributions of Itard, Seguin, Montessori, and Doll on the important role of personal competence and the role of environmental influences in human adaptation and performance are still timely in contemporary efforts to define mental retardation and other developmental disabilities. We feel it is critically important to explore and define the many features of personal competence and the critical features of environment that limit or enhance aspects of human adaptation and performance.

There is ample and growing evidence that the historic emphasis upon personal competency and adaptation is critical in defining mental retardation. With this emphasis, it is likely that we will witness continuingly more sophisticated measures, with greater technical soundness, in assessing aspects of performance outside more standard cognitive and academic achievement measures. Similar energy should be expended to improve assessment of the role of environment in influencing behavior and development and in enhancing human performance.

Today there is a better understanding of the various pieces of the puzzle than in the past. Despite all of the consternation and debate over vari-

ous definitions of mental retardation during the past decade, we are optimistic about the future. Progress in measuring essential dimensions of mental retardation will yield progress in supporting the population of persons with mental retardation in a thoughtful and equitable manner. There is no better time to complete the work that is needed to gain a better understanding of each piece of the puzzle and an improved appreciation of how each of these pieces fit together to create greater opportunity for persons with intellectual disabilities.

## References


Ad Hoc Committee on Terminology and Classification. (2001). Request for comments on proposed new edition of mental retardation: Definition, classification, and systems of supports. *AAMR News and Notes, 14*(5), 1, 9–12.

Baumeister, A. A., Kupstas, F. D., & Woodley-Zanthos, P. (1993). *The new morbidity: Recommendations for action and an updated guide to state planning for the preventions of mental retardation and related conditions associated with socioeconomic conditions.* Washington, DC: President's Committee on Mental Retardation.

Bruininks, R. H., McGrew, K. S., & Maruyama, G. (1988). Structure of adaptive behavior in samples with and without mental retardation. *American Journal on Mental Retardation, 93,* 265–272.

Bruininks, R. H., Thurlow, M., & Gilman, C. J. (1987). Adaptive behavior and mental retardation. *Journal of Special Education, 21,* 69–88.

Butterworth, J., Hagner, D., Heikkinen, B., Faris, S., DeMello, S., & McDonough, K. (1993). *Whole life planning: A guide for organizers and facilitators.* Boston: Children's Hospital, Institute for Community Inclusion.

Clausen, J. (1972). The continuing problem of defining mental deficiency. *Journal of Special Education, 6,* 97–106.

Coulter, W. A., & Morrow, H. W. (1978). A contemporary conception of adaptive behavior within the scope of psychological assessment. In W. A. Coulter & H. W. Morrow (Eds.), *Adaptive behavior: Concepts and measurements* (pp. 3–20). New York: Grune & Stratton.

Danforth, S. (1997). On what basis hope? Modern progress and postmodern possibilities. *Mental Retardation, 35,* 93–106.

Davies, S. P. (1959). *The mentally retarded in society.* New York: Columbia University Press.

Doll, E. A. (1936). President's address. *Journal of Psycho-Asthetics, 18,* 40–41.

Doll, E. A. (1941). The essentials of an inclusive concept of mental deficiency. *American Journal of Mental Deficiency, 46,* 214–219.

Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences.* New York: Basic Books.

Greenspan, S. (1979). Social intelligence in the retarded. In N. R. Ellis (Ed.), *Handbook of mental deficiency: Psychological theory and research* (2nd ed., pp. 483–532). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Greenspan, S. (1981). Defining childhood social competence: A proposed working model. In B. K. Keough (Ed.), *Advances in special education, Vol. 3. Socialization influences on exceptionality* (pp. 1–29). Greenwich, CT: JAI.

Greenspan, S. (1997). Dead manual walking? Why the 1992 AAMR definition needs redoing. *Education and Training in Mental Retardation and Developmental Disabilities, 32,* 179–190.

Greenspan, S. (1999a). A contextualist perspective on adaptive behavior. In R. L. Schalock (Ed.), *Adaptive behavior and its measurement: Implications for the field of mental retardation* (pp.15–42). Washington, DC: American Association on Mental Retardation.

Greenspan, S. (1999b). What is meant by mental retardation? *International Review of Psychiatry, 11,* 6–18.

Greenspan, S., & Driscoll, J. (1997). The role of intelligence in a broad model of personal competence. In D. P. Flanagan, J. L. Genshaft, and P. L. Harrison (Eds.), *Contemporary intellectual assessment: Theories, tests, and issues* (pp. 131–150). New York: Guilford.

Greenspan, S., & Granfield, J. M. (1992). Reconsidering the construct of mental retardation: Implications of a model of social competence. *American Journal on Mental Retardation, 96,* 442–453.

Heber, R. (1959). A manual on terminology and classification in mental retardation. *Monograph Supplement to the American Journal of Mental Deficiency, 62.*

Hockenbury, J. C., Kauffman, J. M., & Hallahan, D. P. (1999–2000). What is right about special education? *Exceptionality, 8,* 3–11.

Jacobson, J. W., & Mulick, J. A. (1992). A new definition of mentally retarded or a new definition of practice. *Psychology in Mental Retardation and Developmental Disabilities, 18,* 9–14.

Kauffman, J. M. (1999). Commentary: Today's special education and its messages for tomorrow. *The Journal of Special Education, 32,* 244–254.

Kliewer, C., & Biklen, D. (1996). Labeling: Who wants to be called retarded? In W. Stainback and S. Stainback (Eds.), *Controversial issues confronting special education: Divergent perspectives* (pp. 83–95). Boston: Allyn & Bacon.

Lewis, D. R., Bruininks, R. H., Thurlow, M. L., & McGrew, K. (1989). A note on the use of earnings functions and human capital theory in assessing special education. *Economics of Education Review, 8,* 285–290.

Luckasson, R., Borthwick-Duffy, S., Buntinx, W. H. E., Coulter, D. L., Craig, E. M., Reeve, A., et al. (2002). *Mental retardation: Definition, classification, and systems of support* (10th ed.). Washington, DC: American Association on Mental Retardation.

Luckasson, R., Coulter, D. L., Polloway, E. A., Reiss, S., Schalock, R. L., Snell, M. E., et al. (1992). *Mental retardation: Definition, classification, and systems of support* (9th ed.). Washington, DC: American Association on Mental Retardation.

MacMillan, D. L., Gresham, F. M., & Siperstein, G. N. (1993). Conceptual and psychometric concerns about the 1992 AAMR definitions of mental retardation. *American Journal of Mental Retardation, 98,* 325–335.

Matson, J. L., Epstein, M. H., & Cullinan, D. (1984). A factor analytic study of the Quay–Peterson Scale with mentally retarded adolescents. *Education and Training of the Mentally Retarded, 19,* 150–154.

McGrew, K. S. (2001, October). *The big picture of assessment: The Forrest Gump model*. Presentation at the Wisconsin School Psychologists Association Annual Conference, Manitowoc, WI.

McGrew, K. S., & Bruininks, R. H. (1989). The factor structure of adaptive behavior. *School Psychology Review, 18,* 64–81.

McGrew, K. S., Bruininks, R. H., & Johnson, D. R. (1996). A confirmatory factor analysis investigation of Greenspan's model of personal competence. *American Journal on Mental Retardation, 100,* 533–545.

Meyers, C., Nihira, K., & Zetlin, A. (1979). The measurement of adaptive behavior. In N. R. Ellis (Ed.), *Handbook on mental deficiency: Psychological theory and research* (2nd ed., pp. 431–481). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Mount, B., & Zwernik, K. (1988). *It's never too early, it's never too late: A booklet about personal futures planning*. Mears Park Centre, MN: Metropolitan Council.

Nihira, K. (1999). Adaptive behavior: A historical overview. In R. L. Schalock (Ed.), *Adaptive behavior and its measurement: Implications for the field of mental retardation* (pp. 15–42). Washington, DC: American Association on Mental Retardation.

Owens, E. P., & Bowling, D. H. (1970). Internal consistency and factor structure of the Preschool Attainment Record. *American Journal of Mental Deficiency, 75,* 170–171.

Schalock, R. L. (2002). Mental retardation: A condition characterized by significant limitations in practical, conceptual, and social skills. Manuscript submitted for publication.

Scheerenberger, R. (1983). *A history of mental retardation*. Baltimore: Brookes.

Smith, J. D. (1998). Defining mental retardation: The natural history of a concept. In A. Hilton & R. Ringlaben (Eds.), *Best and promising practices in developmental disabilities* (pp. 15–21). Austin, TX: PRO-ED.

Sparrow, S. S., & Cicchetti, D. V. (1978). Behavior rating inventory for moderately, severely, and profoundly retarded persons. *American Journal of Mental Deficiency, 82,* 365–374.

Steinfeld, E., & Danford, G. S. (Eds). (1999). *Enabling environments: Measuring the impact of environment on disability and rehabilitation*. New York: Kluwer Academic/Plenum.

Thompson, J. R., McGrew, K. S. & Bruininks, R. H. (1999). Adaptive and maladaptive behavior: Functional and structural characteristics. In R. L. Schalock (Ed.), *Adaptive behavior and its measurement: Implications for the field of mental retardation* (pp. 15–42). Washington, DC: American Association on Mental Retardation.

Thompson, J. R., Bryant, B., Campbell, E. M., Craig, E. M., Hughes, C., Rotholtz, D. A., et al. (2002). Support Intensity Scale. Unpublished assessment scale.

Thompson, J. R., Hughes, C., Schalock, R. L., Silverman, W., Tassé, M. J., Bryant. B., et al. (2002). Integrating supports in assessment and planning. *Mental Retardation, 40,* 390–405.

Tredgold, A. F. (1922). *Mental deficiency.* New York: Wood.

Wagner, R. K. (1994). Practical intelligence. In R. J. Sternberg (Ed.), *The encyclopedia of human intelligence* (pp. 821–828). New York: Macmillan.

Widaman, K. F., Borthwick-Duffy, S. A., & Little, T. D. (1991). The structure and development of adaptive behaviors. In N. W. Bray (Ed.), *International review of research in mental retardation, 17,* 1–54.

Widaman, K. F., & McGrew, K. S. (1996). The structure of adaptive behavior. In J. W. Jacobson & J. A. Mulick (Eds.), *Manual of diagnosis and professional practice in mental retardation* (pp. 97–110). Washington, DC: American Psychological Association.

Ysseldyke, J. E., Algozzine, B., & Thurlow, M. L. (1992). *Critical issues in special education*. Boston: Houghton Mifflin.

Zigler, E., Balla, D., & Hodapp, R. (1984). On the definition and classification of mental retardation. *American Journal of Mental Deficiency, 89,* 215–230.