

Best Practices in Monitoring Progress for Preschool Children

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OVERVIEW

The United States has a long-standing tradition of formal and informal education for preschool children, particularly those between 3 years of age and kindergarten entry. Beginning in the late nineteenth century and influenced by Europeans Simon Binet, Maria Montessori, and Fredrich Froebel, American parents and policy makers have understood that experiences for children before the start of formal education might provide an important foundation, or even an initial advantage, for subsequent learning and development. In the latter half of the twentieth century, public investment in preschool education expanded substantially, most notably with the formation of Head Start in the 1960s and the expansion of special education services to preschoolers (Education for All Handicapped Children Act in 1975 and expanding with reauthorization of Federal special education law in the 1980s).

The beginning of the twenty-first century brings additional attention to the importance of early education. First, there has been substantial growth of knowledge of young children's development, factors that promote that development, and preschool development's relation to later academic and behavioral achievement (Hart & Risley, 1996; Shonkoff & Phillips, 2000; Snow, Burns, & Griffin, 1998). Second, expansion of standards and expectations for later school performance (e.g., No Child Left Behind and similar state and local standards and accountability initiatives) have led educators and policy makers to better understand the potential contribution of preventive and compensatory education programs for children

prior to kindergarten entry and has led to federal (Good Start Grow Smart) and state policies (universal pre-kindergarten programs in states like Georgia and Oklahoma) expanding early childhood services. Third, business and other leaders are increasingly interested in the academic and economic benefits of early care and education, particularly for high-risk children. For example, Federal Reserve Bank economists, building on research by other economists and early educators, have concluded the highest return on investment for any public expenditure may come from expansion of high-quality early education programs for children in poverty. The return on investment (estimated at 16% per year, inflation adjusted) comes from reduced costs (particularly for special education placement and reduced juvenile and adult adjudication and incarceration) and increased revenues (tax payments resulting from higher income earnings as adults; Rolnick & Grunewald, 2003).

Taken together, this expansion in knowledge of early development, importance of its contribution to subsequent achievement and adjustment, and evidence of economic benefits of early intervention have fueled substantial increase in the scope and intensity of early education programs for preschool children. With this growth in scope and intensity, early education has also seen increasing pressure to formalize and align its services with those of the K–12 system; in particular, many early education programs have begun work to demonstrate curricular and developmental alignment with later school performance, and to extend the logic of accountability systems for programs, for staff, and for individuals into preschool programs.

Within this context, we have seen growing interest in development and expansion of school psychology services in this area (Hojnoski & Missall, 2006), with particular emphasis on best practices in the assessment of preschool children generally, and on progress monitoring and response to intervention (RTI) particularly. Like related initiatives for older children, more careful attention to assessment and to the ways assessment contributes to improved intervention has forced school psychologists and other early education professionals to review carefully existing knowledge, tools, procedures, and practices for gathering and then interpreting assessment data, and using these assessment data to improve services (and, subsequently, outcomes) for preschool children.

Most recently, the National Association of School Psychologists yet again articulated and reinforced organizational perspectives and guidelines for improving outcomes for children and youth in *School Psychology: A Blueprint for Training and Practices III* (Ysseldyke et al., 2006). While not specific to young children, or even explicitly inclusive of young children, *Blueprint III* outlined for all school psychologists the critical importance of developing competent skills to enhance children's academic skills and using data-based decision making to improve competencies and outcomes for children and youth.

The previous edition of *Best Practices* presented an overview of Individual Growth and Development Indicators (IGDIs) for preschool children, describing IGDIs as general outcome measures (GOM) of development (McConnell, Priest, Davis, & McEvoy, 2002). The purpose of the present chapter is to update information provided in 2002 by reviewing relevant information on IGDIs, describing findings from recent research and practice efforts to expand the utility of these measures, and relating these assessment practices to a problem-solving approach to early childhood education, and particularly to RTI approaches to preschool services.

BASIC CONSIDERATIONS

Although there are numerous approaches to describing the developmental progress of preschool children, this chapter focuses exclusively on the use of IGDIs, and similar measures of children's development. Preschool IGDIs are brief, easy-to-use, formal assessments of child status and change over time in language, phonological awareness, fine and gross motor skill, and social interaction developed as part of the federally funded

Early Childhood Research Institute on Measuring Growth and Development (for more information, see <http://education.umn.edu/ceed/projects/ecri/>).

IGDIs are examples of GOMs (Deno, 1997; Fuchs & Deno, 1991), and other examples of GOM, likely familiar to readers, include curriculum-based measurement in reading (R-CBM), mathematics, written expression, and various content areas (Deno, 1986; Marston, Mirkin, & Deno, 1984); Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good, Gruba, & Kaminski, 2002), and Infant Toddler Individual Growth and Development Indicators (Greenwood, Luze, & Carta, 2002). GOMs are uniquely suited to the challenges of monitoring individual students' progress within the context of RTI models. These measures are simple and easy to collect, can be administered frequently and repeatedly, are sensitive to relatively small changes in children's achievement, and mark progress toward a long-term desired outcome (Elliott & Fuchs, 1997; Missall et al., in press).

Historically, there has been a fair amount of controversy in early childhood education about assessment practices in preschool generally, and use of assessments that describe individual progress in high-stakes areas of development particularly (McConnell, 2000; Meisels & Atkins-Burnett, 2004). Recent developments in federal and state policy, including expansion of programs to promote school readiness and early literacy development among children at risk for later achievement problems, bring these issues into new focus. Programs have added formal assessments to describe child outcomes, to document effects of services, and to produce data that local programs can use to improve services for children and families. Most notably, in recent years Head Start grantees have been required to complete a standard battery of assessments for all enrolled children (Government Accounting Office, 2005) and Early Reading First grantees—typically, full-day, full-year programs designed to promote language and literacy development for high-risk children—have added regular, systematic, and individualized assessment to describe child outcomes.

As programs expand interest in assessment activities for preschool children, the field has encountered a relative dearth of measures, particularly in domains of early language and literacy development, that can be used to describe functional program effects and child progress. IGDIs offer the capacity to monitor preschool children's development of language, early literacy, and other competencies, to evaluate both status and progress over time with respect to socially determined and

empirical standards of later school success (Missall, Reschly, et al., in press).

For this chapter, we will focus on assessment of child progress in two primary domains of concern: early language development and early literacy development. Although other aspects of young children's development are certainly related to both desired outcomes in preschool and later social and empirical indicators of school success (see Pianta & Cox, 1999), language and literacy development are high-value aspects of children's development and performance in school and community settings (Snow, Burns, & Griffin, 1998; Whitehurst & Lonigan, 1998).

Recent Advances in Research and Development of Preschool IGDIs

In the previous edition of *Best Practices*, we introduced Preschool IGDIs, and described development, administration, scoring, and application (McConnell, Priest, et al., 2002). Since that time, research projects have evaluated and applied Preschool IGDIs in innovative and informative ways. Studies have examined differences in Early Literacy IGDI scores (EL-IGDIs include Picture Naming, Rhyming, and Alliteration IGDIs) and rates of growth across diverse groups of children (Cadigan & Missall, in press; Missall, McConnell, & Cadigan, 2006) and relations between EL-IGDIs and kindergarten measures of literacy and first-grade R-CBM (Missall, Reschly, et al., in press). Some intervention studies have been completed, citing sensitivity to intervention effects and social validity of the measures (Phaneuf & Silbergliitt, 2003), as key findings. Several papers have also been written to specifically engage practitioners and describe use and application of IGDIs in early childhood settings (Hojnoski & Missall, 2006; McConnell, McEvoy, & Priest, 2002; Missall, Carta, et al., in press).

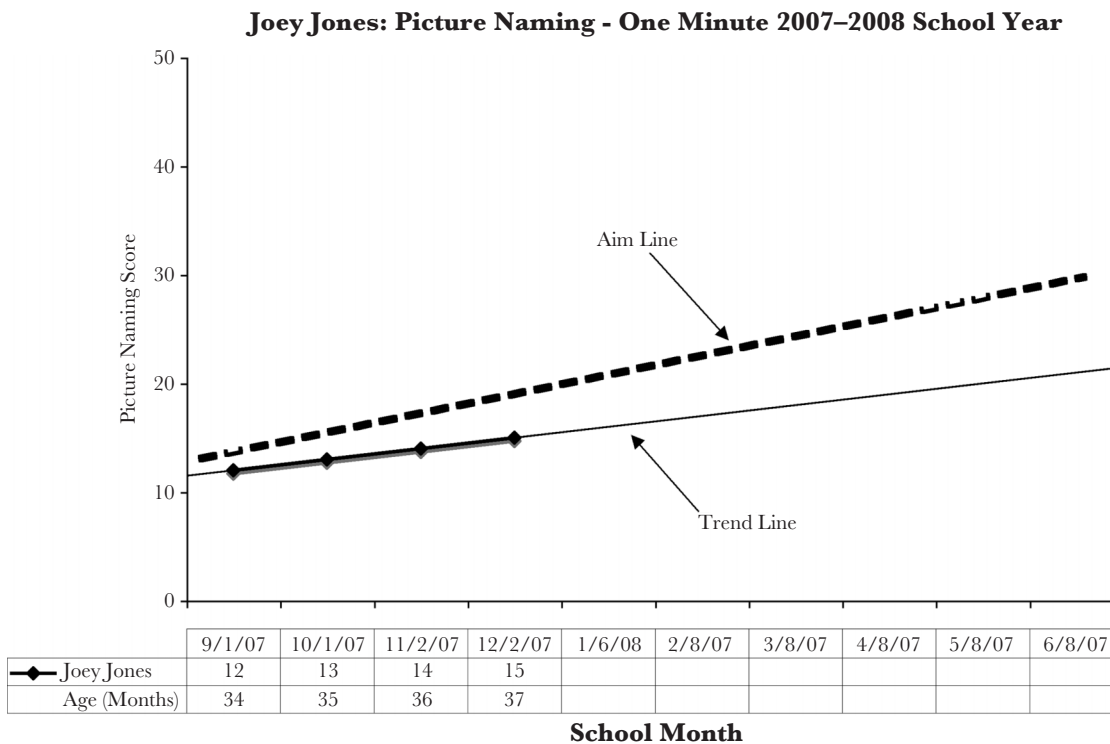
Teachers and paraprofessionals in preschool programs around the country have been taught successfully to administer, score, and use IGDIs reliably. Oftentimes, a trainer-of-trainers model is utilized where school psychologists or other select staff members from a variety of programs or sites attend a workshop by one or more members of the team that originally developed IGDIs, where they learn to administer and score IGDIs and use online data management resources, and then return to their local program and train additional staff. As a result of training efforts and from interest in the measures, in general, a number of preschool programs around the country have been using IGDIs for several

years. States have adopted the measures as evaluation and/or progress-monitoring tools in statewide implementations and pilots (Ohio, New Mexico), and other states have used the measures to create a baseline of student performance (Missall & Jung, 2006). Numerous school districts, regions, and counties have also adopted the measures. We surmise this is fueled at least in part by interest in and use of DIBELS and RTI. In 2004, more than 35% of Early Reading First grantees used IGDIs to assess child language and literacy outcomes (U.S. Department of Education, 2004) and the Pre-Elementary Education Longitudinal Study (PEELS; <http://www.peels.org/Assessments.asp>) adapted the measures for their national evaluation of young children.

IGDIs have also been adopted as central elements of professional development efforts to improve language and literacy promoting activities in early childhood care and education settings (McConnell et al., 2005). In these efforts, teachers are taught to collect data for all children in their setting, typically on a quarterly basis. These data are reviewed for the entire class or care group to assess overall progress and (with consultant assistance) to identify individual children who are not making adequate progress as compared to other children their age and/or other children in their care or education setting. Professional development, coaching, and intervention revision is then focused on these cases, working with the care provider or teacher to adapt and/or adopt more effective services for the individual or group.

Since the writing of the previous version of this chapter, we have continued to develop and refine the Preschool IGDI website, otherwise known as Get it, Got it, Go! (<http://ggg.umn.edu>). The website was primarily developed to manage large-scale use and application of Preschool IGDIs. At the current time, the website has three primary functions. The first function (or section of the website, *Get it!*) provides access to all materials and forms necessary for IGDI administration and scoring, as well as various presentations, reports, and manuscripts. The second function, *Got it*, is the portion of the website allocated for data management. Here, users can download forms to record and manage data, enter data for individual children and groups of children (e.g., classroom, center), create trendlines of performance over time and compare those trendlines to a preset aimline based on age (see Figure 1), and produce graphical and text reports to help interpret progress. The third function, *Go!*, is still under development, but at this time contains ideas about linking assessment to

Figure 1. Screen shot of an individual student report from the Get it, Got it, Go! website.



intervention to produce increases in slope. Currently, more than 75,000 children are registered in Get it, Got it, Go!

2 Last, advances in RTI (see Gruba, chapter 62, vol. 3) are being extended to preschool children and the programs that serve them. While some features of “typical” RTI models are different in early childhood (due primarily to differences in the specificity of curricular and developmental achievement expectations, and the absence of universal services), IGDIs appear to be promising measures for implementation of Tiers 1, 2, and 3 RTI efforts in early childhood.

Background Information

The successful use of EL-IGDIs for periodic or frequent assessment, or in more elaborate systems of program review and improvement (like RTI), rests on the assumption that practitioners employing these tools have background knowledge and information to support refined and appropriate use. Although full coverage of essential background knowledge for use of EL-IGDIs is beyond the scope of this chapter, essential knowledge in four areas—early language development, early literacy development, GOM, and RTI in early childhood—is reviewed briefly in this section.

Early Language Development

Children’s acquisition of oral language—the ability to communicate wants and needs and express feelings to others (Priest et al., 2002)—is a foundation of academic, social, and personal development. Compelling evidence exists that language development is influenced by experience and interaction (Hart & Risley, 1996), is highly valued by parents and educators (Priest et al., 2002), and is related to later academic performance (Missall, Reschly, et al., in press; Snow et al., 1998; Walker, Greenwood, Hart, & Carta, 1994). Oral language is a complex and multidimensional competency that includes aspects of phonological articulation, vocabulary, syntax, semantics, and pragmatics (Whitehurst & Lonigan, 1998). Its development influences and is influenced by development in other domains (e.g., cognitive skills, social development; Fey, Windsor, & Warren, 1995), and intervention in this area is a major component of intervention for preschoolers with disabilities and those from high-risk environments (Goldstein & Woods, 2002).

Early Literacy Development

Although formal reading instruction typically does not begin until enrollment in the K–12 system, there is broad consensus that the development of early literacy

competence begins long before kindergarten entry (Snow et al., 1998). Early literacy development (also called, at times, emergent literacy development) is related to, but different from, formal reading competence.

Although theoretical and instructional models of reading and its development still receive some attention and debate, Adams (1990) offers a robust model for understanding children's development of early reading skills (i.e., those developed after formal reading instruction begins in kindergarten or the primary grades). Theoretical and empirical work since the 1990s has added substantially to the understanding of developmental foundations prior to kindergarten entry, most notably Whitehurst and Lonigan (1998) have proposed a model that includes "inside-out skills" (i.e., production of sounds, knowledge of letters, and letter-sound correspondence, or foundations of the alphabetic principle), "outside-in skills" (i.e., knowledge of contextual or narrative units and semantic or conceptual units, or store of knowledge and background information), and language skills (particularly vocabulary). Sénéchal, LeFevre, Smith-Chant, & Colton, (2001) propose a similar structure, with more attention to phonological awareness and its importance in very early reading performance (cf., Adams, 1990).

Our review of the literature on early literacy development suggests three interlocking, but somewhat distinct, skill areas that are important in the preschool years: (a) language development and associated cognitive/conceptual development, where children develop both a substantial and functional vocabulary *and* a store of knowledge of the world and its workings; (b) phonological awareness, where children learn to parse and manipulate the sounds of spoken language (and, thus, have a basis for interpreting words produced from written text); and (c) concepts about print (including alphabetic principle, left-to-right correspondence, and other social conventions of reading English). Any assessment of early literacy development—either a developmental skills mastery monitoring approach or a more robust GOMs approach (see the next section)—should describe and/or relate to a child's performance in these areas of development.

GOMs

GOM is distinguished by the repeated sampling of child performance on a common task, assessing change in quality and complexity of performance over time. This approach to assessment is characterized by assessing incremental improvement in a child's performance of

the various tasks and skills required to demonstrate proficiency on a general outcome, or goal, a socially valued, multidimensional aspect of performance like reading or communicating. As such, GOM can be thought of as assessment of relative proficiency on global outcomes toward which development and intervention is directed. Further, GOM provides practitioners with a set of standardized, prescribed measurement procedures with known psychometric properties (Deno, 1997).

Because GOMs sample changes in child performance on a constant metric over time, and because these measures are designed to describe children's progress toward a long-term goal, two different aspects of child development can be described. First, like other traditional standardized tests, GOM can describe a child's status *at a particular point in time*. These status measures can be evaluated normatively (e.g., percentile rank within an age- or grade-based sample) or in terms of a priori criterion-referenced standards (e.g., achieving a benchmark associated the likelihood of achieving a subsequent level of performance). These time-based measures of child status are well-suited to RTI decisions like those typically made at Tier 1 or, in some cases, Tier 3.

GOMs can also describe a child's *rate of development across time*. As noted, GOMs can be administered repeatedly, and use a constant standard to evaluate child performance across these repeated assessment occasions. As a result, growth over time can be evaluated as slope (i.e., increase in performance as a function of time). In addition to the obvious relation between slope estimates and the underlying assumptions of education and child development, description of child growth permits a host of other evaluative standards, including contemporary comparisons of individual or group performance during intervention, as compared to that of other individuals or groups (Missall et al., 2006; Missall, Carta, et al., in press). Additionally, growth rates or slopes can be used to aid in forecasts about children's performance in later months or settings, and thus can be used to make treatment decisions within problem-solving IEP or RTI models. (It should be noted, however, that psychometric characteristics of IGDIs, and a growing understanding of the empirical function of GOM slopes, lead to new questions about the reliability of these types of forecasts.)

RTI in Early Childhood Settings

As an evidence-based, multitiered prevention initiative, RTI models generally exist to redefine traditional perspectives about learning disabilities (from cognitively

based difficulties to experientially based difficulties) via data-based decision making across multiple levels. Because preschool environments in comparison to K–12 settings have much less of an academic structure, less consistency across settings, and less accountability in general, the application of RTI models in preschool could potentially look vastly different than K–12 settings (Coleman, Buysse, & Neitzel, 2006). Additionally, because preschool in and of itself is not a universal program in most states, the concept of universal access or intervention (Tier 1) beyond an individual classroom context is difficult to assume. Similarly, it is also important to consider terminology issues in translation of a general RTI model to preschool.

For example, in a typical K–12 RTI model, Tier 1 generally references universal instruction/intervention and assessment (benchmarking), Tier 2 includes those children who prove to be unsuccessful according to the stipulations articulated in Tier 1 and who receive intensified instruction/intervention and assessment (progress monitoring) in Tier 2, and Tier 3 encompasses those children who do not respond positively (based on frequently collected assessment data) to increased intervention in Tier 2 and who continue to need intense instructional support and who should perhaps be considered for special education. Translating this model to preschool requires understanding of preschool environments. First, preschool educators describe their daily interactions with children as *classroom practices* rather than *instruction*. Second, even though preschool teachers often engage in assessment of child progress and skill acquisition, they do not commonly refer to their assessment methods or practices as benchmarking or progress monitoring.

In K–12 settings, CBM has been favored for documenting student progress and RTI, particularly in the areas of reading (e.g., Fuchs, Fuchs, & Compton, 2004) and mathematics (Calhoun & Fuchs, 2003; Fuchs et al., 2007). CBM, as GOMs, have likely been favored because assessments most successful in RTI models have the specific features of being (a) repeatable, so that child performance can be judged on a standard and comparable basis across time; (b) reliable, including moderate to small standard errors of measurement, to produce meaningful and comparable scores across repeated assessment occasions; (c) valid, particularly in reference to valued and important dimensions of child achievement and adjustment; (d) sensitive to detect changes in achievement over short periods of time, thus characterizing responses to changing intervention; and (e) logistically and cost efficient, so that measures can be

used with fidelity and as frequently as needed in the busy, demanding environments where RTI is conducted (Elliott & Fuchs, 1997). With the development of CBM-like measures for preschool (Preschool IGDIs), one solid option for a K–12-like RTI model in preschool settings has become possible, particularly in the areas of language and literacy development.

Experience Required for Use of IGDIs

What experience is needed to administer, manage, and interpret IGDI assessments? While the tools can easily be used by most school psychologists with basic experience in child assessment, administration of IGDIs has been designed to be conducted by individuals with little formal experience in child assessment; that is, critical skills require reading and speaking English (to administer directions), basic child management skills (e.g., to engage a child in a preselected task, to bring the child's attention to the requirements of that task, and to manage any possible disruptions over a period of 2–10 minutes), and simple test administration skills (i.e., following prescribed protocol, keeping time, avoiding provision of corrective feedback). Data management is similarly dependent on modest experience; that is, for paper-and-pencil recording systems, users must be able to record scores accurately and manage materials and filing of paper in ways that maintain confidentiality and preserve data integrity. For use of the online system, *Get it, Got it, Go!*, users will require a fairly low level of computer, keyboarding, and website skills, including finding and logging on to a secure website, managing data entry to maintain accuracy, and negotiating site links to save data and produce required reports.

Interpretation of IGDI results requires some greater degree of sophistication, and may be associated with advance training generally in a discipline with strong assessment characteristics (e.g., school psychology, special education, speech and hearing sciences) or focused and in-depth training and technical assistance in assessment interpretation. Here, experience would be needed in interpreting complex indicator-level assessment data, comparing status and growth estimates to a priori standards of performance and growth, and producing clinical interpretations of these results in ways that parents, early childhood educators, and others can understand and use for monitoring and/or decision making. Direct experience with applications of GOM (including use of CBM and/or involvement in RTI implementation) would be useful but not necessary.

Training Required for Use of IGDIs

A variety of groups and agencies provide training for IGDI administration, data management, and data utilization. This effort was initially led by the original team of researchers and developers at the University of Minnesota (see <http://www.education.umn.edu/ceed>), and now includes colleagues in all parts of the country, as well as researchers and practitioners who have implemented similar measures with different populations (see Greenwood et al., chapter 32, vol. 2) and state or local education agencies.

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Training takes a number of forms. In some instances, depending on background skills and experience of likely users, proficiency in administration, data management, and interpretation can be achieved by self-study with materials available online at Get it, Got it, Go! In other instances, more skilled local practitioners or program managers can use materials available at Get it, Got it, Go! to provide training to colleagues and coworkers who may have less background and skill, or, as mentioned earlier in this chapter, training workshops are provided by an off-site expert and often follow a trainer-of-trainers model where key personnel attend training in order to become onsite contacts and experts. Online training series are also being developed.

BEST PRACTICES

IGDIs are composed of a suite of measures that share common features of GOM but target unique skill areas of early literacy development. A technical report detailing the psychometric properties of the measures can be accessed at <http://ggg.umn.edu/techreports/dissemination.html#TechRep>. Each of the measures has standardized administration and scoring procedures, as well as sample items and cutoff criteria for continuing with assessments.

Picture Naming

The first IGDI, Picture Naming, is a measure of expressive language development. Picture Naming is completed by presenting children with individual pictures (from a standard set) of objects found in natural environments, including the home (e.g., clock, apple), classroom (e.g., pencil, book), and community (e.g., bird, bus). Children are asked to name pictures as quickly as possible. The number of pictures named correctly in 1 minute is the child's score.

Picture Naming scores appear to be temporally reliable. One-month alternate form reliability

coefficients have ranged from $r = .44$ to $.78$ (McConnell, Priest, et al., 2002). For a sample of 29 children between 35 and 69 months of age without identified risks or disabilities, test-retest reliability across 3 weeks was $r = .67$.

Research has also found Picture Naming related to other, long-established measures of children's expressive language skills including moderate to high correlations with the Peabody Picture Vocabulary Test-Third Edition (PPVT-3; $r = .56$ to $.75$; Dunn & Dunn, 1997) and the Preschool Language Scale-Third Edition ($r = .63$ to $.79$; Zimmerman, Steiner, & Pond, 1992; Priest, McConnell, McEvoy, & Shin, 2000), and correlations with DIBELS Letter Naming Fluency (LNF; $r = .32$ to $.37$) and Onset Recognition Fluency (OnRF; $r = .44$ to $.49$; McConnell, Priest et al., 2002; Missall, 2002).

Picture Naming also appears to be sensitive to preschoolers' growing expressive language skills, with moderate correlations between children's scores and chronological age ($r = .41$ in a longitudinal study with 90 participants, and $r = .60$ in a cross-sectional study with 39 participants; McConnell, Priest, et al., 2002). In a longitudinal study of 90 preschoolers, hierarchical linear modeling results centered at 66 months of age showed an average Picture Naming score of 26.90 for children without identified risks, 19.01 for low-income children, and 16.88 for children with identified disabilities (Priest, McConnell, et al., 2000), with growth rates varying across the three groups (.44 pictures per month for children with no known risks compared to .28/month for children from low-income families and .36/month for children with identified disabilities).

Rhyming

Rhyming is an IGDI-EL that samples children's phonological awareness. In Rhyming, the child is presented with a card that has one stimulus picture on the top of the card (e.g., *bees*) and three pictures across the bottom of the card representing one correct and two incorrect responses (e.g., *house, pants, cheese*). The examiner points to and names each picture and asks the child to point to the picture that sounds the same as the top picture. Each administration continues for 2 minutes, and a child's score is the number of correctly identified rhymes.

Rhyming appears to have moderate temporal reliability. In a sample of 42 preschoolers (with and without risks), test-retest reliability of scores more than 3 weeks was $r = .83$ to $.89$ (Priest, Silbergliitt, Hall, & Estrem, 2000). Additionally, there is some evidence for criterion

validity for this measure, with demonstrated correlations to the PPVT-3 ($r = .56$ to $.62$), Concepts About Print (CAP; $r = .54$ to $.64$; Clay, 1985), and Test of Phonological Awareness (TOPA; $r = .44$ to $.62$; Torgeson & Bryant, 1994; McConnell, Priest, et al., 2002). Rhyming is also moderately to highly correlated with Picture Naming ($r = .46$ to $.63$) and Alliteration ($r = .43$; Missall, 2002), as well as with DIBELS LNF ($r = .48$ to $.59$) and OnRF ($r = .44$ to $.68$; McConnell, Priest, et al., 2002; Missall, 2002).

Rhyming correlates with child age cross sectionally and longitudinally (estimated averages at 53 months of 7.61 for children without identified risks, 6.5 for low income children, and 5.07 for children with identified disabilities; Priest, Silbergliitt, et al., 2000). Results also showed that Rhyming was sensitive to children's monthly rate of growth, with children without identified risks gaining .38 rhymes per month, children from low-income families gaining .95 rhymes per month, and children with identified disabilities gaining .40 rhymes per month.

Alliteration

Alliteration assesses phonological awareness like Rhyming. Alliteration IGDI cards depict four pictures: a picture of the stimulus word at the top (e.g., *fire*) followed by a row of three other pictures (e.g., *fish*, *cup*, *hat*) with one correct and two incorrect responses. The child is asked to point to the picture that starts with the same sound as the top picture. Alliteration is administered for 2 minutes, and the score is the number of beginning sounds identified correctly.

Alliteration demonstrates moderate to high test–retest reliability over 3 weeks ($r = .62$ to $.88$; Priest, Silbergliitt, et al., 2000). Alliteration IGDI scores correlate with other criterion-related tests, including the PPVT-3 ($r = .40$ to $.57$), TOPA ($r = .75$ to $.79$), and CAP ($r = .34$ to $.55$; McConnell, Priest, et al., 2002). In a study of 84 preschool-aged children (including children with disabilities and those living in poverty), correlations with DIBELS LNF have been moderate to high ($r = .39$ to $.71$; McConnell, Priest, et al., 2002; Missall, 2002). Alliteration scores also correlate positively with age ($r = .61$) and show differences in estimated scores at 53 months (children without identified risks scored 5.23 compared to 4.28 for low-income children, and 4.43 for children with identified disabilities; Priest, Silbergliitt, et al., 2000). Alliteration is also sensitive to children's monthly rate of growth, for children without identified risks gaining .38 alliterations per month, children from low-income families gaining .25 allitera-

tions per month, and children with identified disabilities gaining .36 alliterations per month.

Other IGDI of Early Language and Literacy Development

Research continues in development and evaluation of additional measures to describe language and literacy development among preschool children. To date, research has been conducted on a Segment Blending task, where a child is asked to produce words from a random pool of items segmented at the word (e.g., *cow-boy*), syllable (e.g., *ap-ple*) and phoneme (e.g., /c/ /a/ /t/). Researchers have also explored utility of Picture Naming administered in other language (primarily Spanish and Hmong), and initial results suggest some promise for assessing child growth in native language development. Additionally, research continues on other measures of phonological awareness, early handwriting, and letter naming and sound recognition.

Using Preschool IGDI in a Preschool-Based RTI Model for Early Literacy

RTI rests on empirical and conceptual work conducted since the 1970s in special education and on a panoply of tools and procedures that have been developed for K–12 implementations. Although the logic of RTI has been extended to services for preschool children with disabilities (Coleman et al., 2006), there are few programmatic or empirical demonstrations of its effectiveness or utility in preschool programs. Yet, work conducted with Preschool IGDI leads insight into how a preschool RTI model might operate.

Although Preschool IGDI exist in the areas of language, early literacy, social, motor, and adaptive development, the measures of language and early literacy have received the most attention in research and field applications. These measures, collectively called EL-IGDI, assess expressive language skills (Picture Naming) and phonological awareness skills (Rhyming and Alliteration). In spite of application to document individual child progress, progress for groups of children, relation to other measures of CBM and oral reading, and RTI, and even though EL-IGDI have been used for universal screening and follow-up assessments that closely approximate characteristics of RTI, there is not yet published evidence of their use in what would be considered a traditional RTI model. Therefore, examples provided throughout this chapter are largely hypothetical, although based on strong theoretical base and some empirical findings.

Tier 1

EL-IGDIs were designed to measure key early literacy skills related to reading and the assessments were created with CBM properties. Therefore, they are well suited to collecting baseline information about children's growth and development in early literacy. As with similar assessment models (e.g., DIBELS), seasonal monitoring (e.g., fall, winter, spring) is recommended with EL-IGDIs in order to determine skill levels of groups of children in response to typical, daily instruction or programming. Because EL-IGDIs do not have globally established benchmarks and cutoff scores at this time, analysis of slope estimates and general RTI guidelines can be applied to determine which children may need more careful monitoring, frequent assessment, and select intervention. The two most frequently used methods in Tier 1 assessment for determining which children should move to Tier 2 are (a) a specific skill criterion (e.g., number of words read correctly in one minute) and (b) a cutoff score or guide score (e.g., below 20th percentile; Brown-Chidsey & Steege, 2005). Should a preschool setting wish to establish more stable (and perhaps more trustworthy) cut scores, guidelines for developing local norms with other CBM measures can be applied to preschool CBM (see Habedank-Stewart & Kaminski, 2002; Shinn, 1988; Stewart & Silbergliitt, chapter 13, vol. 2).

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Primary guidelines for collecting data for local norms include establishing a normative sampling plan, collecting these data, and summarizing results into applicable formats. Typically, norms are developed at the classroom, school (or center), and/or school district level. In each level, all children may be assessed to produce norms or a sampling procedure may be developed. Sampling procedures generally involve one-third to one-half of children per classroom who are randomly selected to represent the entire class population or a specific sub-population (see Habedank-Stewart & Kaminski, 2002 or Shinn, 1988, for more detail). At the building, or center level, 15–20% of students in each grade level are randomly sampled with a minimum of 20 students per grade; however, in preschool settings, *grade* could be defined as a year-based subgroup (e.g., kindergarten minus one year, kindergarten minus 2 years). To establish norms for a school district, a sample of 100 children for each norm subgroup is needed, and these data may be aggregated across years in order to accrue enough cases (Habedank-Stewart & Kaminski, 2002). Once data are collected, they are translated into norms in several ways taking into account means, medians, and standard deviations of groups of

interest (e.g., children in regular programming, children with Individualized Educational Plans), and often result in percentile rank scores. These percentile scores are useful for interpreting Tier 1 assessment data because they provide a context for understanding whether the lowest performing children are truly low performing or whether a low score is at the 25th percentile or the 8th percentile as compared to peers. Often, children with scores below the 10th percentile for a given measure as compared to a relevant population are identified for Tier 2. As compared to simply identifying the lowest 20% of a group for monitoring or Tier 2, local norms can be a more sensitive way to identify low-performing children.

Another way to evaluate a child's response to universal instruction is to examine the child's progress over time. Get it, Got it, Go! is designed for accessing information about Preschool IGDIs and managing IGDIs data. Get it, Got it, Go! generates graphical reports of student progress and creates trendlines for individual data and groups of data. The graphical reports also contain a set aimline of a norm-referenced group for guidance (see Figure 1). By comparing the rate of growth for the child or group (trendline) to the norm aimline, conclusions can be made as to whether a child or a group of children is making adequate progress in skill acquisition. An individual graph can be created with more than two data points, or a group graph can be created with only one data point for several children. A group graph based on fall EL-IGDI data can be created and the children with assessment points below the aimline can be considered for Tier 2 intervention.

Tiers 2 and 3

For children moving to Tier 2 in a generic RTI model, scientifically based instructional/classroom practices must be implemented. For preschoolers, empirically supported interventions to support early literacy development might include one of several emerging curricula used commonly in Early Reading First or documented as effective at the What Works Clearinghouse (<http://www.whatworks.ed.gov/Topic.asp?tid=13&ReturnPage=default.asp>). Alternatively, local programs may implement a more intensive professional development and coaching model, with attention to local evaluation of program effects (see, e.g., McConnell et al., 2005). Clearly, this is an area of emerging knowledge in early care and education, and one in which interested practitioners will have to seek most recent information to monitor changes in evidence-based practices.

In Tiers 2 and 3, regular assessment data must be collected for those children identified as at risk for skill development. Frequency of EL-IGDI assessments should be increased from seasonal to monthly, bimonthly, or even weekly. At Tier 2, the goal is to determine if some of the children identified as at risk in Tier 1 respond to the more intense intervention. This could be determined by examining rates of growth on the Get it, Got it, Go! website and comparing rates of growth during Tier 1 to rates of growth during Tier 2 (see Figure 2). If a child's slope increased from Tier 1 to Tier 2, the movement could be attributed to the intervention. If a child's slope changed enough and to the degree that they were on target to reaching the aimline, the educational team would determine whether the intervention should continue and the child would not be considered for Tier 3. If a child did not respond to intervention, as indicated by a flat or decreasing slope, a different intervention would need to be implemented and the child would be considered for Tier 3 and if performance maintained, referred for a more comprehensive evaluation.

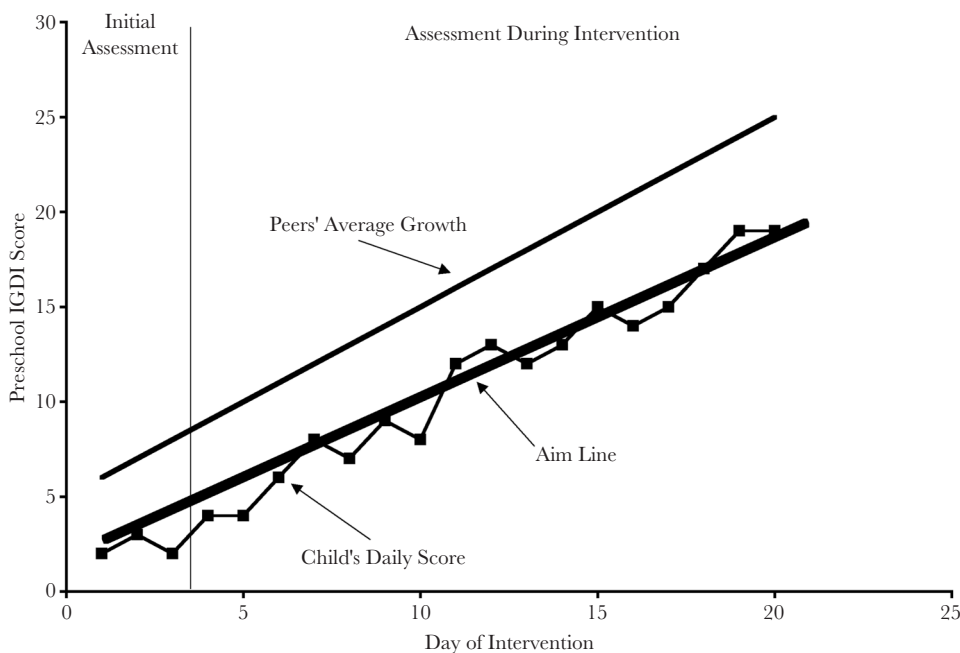
Using EL-IGDIs in an RTI Model

Significant progress has been made in the development and evaluation of EL-IGDIs for language and early literacy development. Although the measures still need substantial development and evaluation, few alternatives

exist for monitoring children's progress toward early language and literacy goals. Because the measures are not yet fully appropriate for implementation in an RTI model, practitioners will need to proceed with caution. Research has identified some problems with sensitivity of the Rhyming and Alliteration EL-IGDIs, in particular, with floor effects on the measures for 3- and 4-year old children with risk factors (e.g., disability or poverty status; Missall et al., 2006; Missall, Reschly, et al., in press). A second issue related to sensitivity is that of frequency of administration. Many assessments used as progress-monitoring tools are sensitive to skill growth after 1 week. Current EL-IGDIs are generally not sensitive enough to show incremental skill gains at 1-week intervals.

Additionally, although it is feasible, and perhaps even desirable for individual sites to create local norms, more broadly applicable benchmarks, cut scores, and norms need to be created. Research needs to determine empirically the cut scores and benchmarks for setting treatment goals, as indexed against both preschool and early elementary outcomes and standards for children in language and literacy domains. Similarly, the measures are sensitive for children across the preschool age range of 3–5 years; however, some preschool programs only serve children between the ages of 4 and 5 and research needs to determine whether rates of growth differ when age ranges are restricted.

Figure 2. IGDI assessment during baseline and intervention.



Finally, although measures of expressive language and phonological awareness account for a great deal of variance in predicting early reading (Missall, Reschly, et al., in press), the EL-IGDIs do not currently represent a comprehensive set of measures to assess critical indicators of early literacy development. Work needs to be conducted to expand and more fully prepare and evaluate a set of EL-IGDIs such that these tools can support further expansion and implementation of RTI in preschool special education.

SUMMARY

Research and practice in CBM, GOM, problem-solving, and RTI approaches to intervention design and improvement have, collectively, created a strong conceptual/theoretical and empirical base for school psychologists and others to improve services to individual children and groups of children. With recent expansion of services and attention to preschool-aged children, and with the growing understanding of functional and empirical links between children's developmental achievements in preschool and their academic and social success in elementary and secondary school, there is strong interest in extending prior work—logically and practically—to a new population of young children and the more varied settings that serve these children.

School psychologists have a growing portfolio of measures, assessment practices, and infrastructure supports (both data management and training) to support this expansion of effective practices into early care and education. In particular, three measures—Picture Naming (a 1-minute measure of expressive vocabulary) and Rhyming and Alliteration (two 2-minute measures of phonological awareness)—form a suite of EL-IGDIs. These three measures, alone and in combination, can be used to monitor preschool children's progress toward early literacy and reading benchmarks from age 3 to kindergarten, and can be the basis for both more focused program evaluation, RTI programming, and a problem-solving approach to serving preschool children at risk for reading acquisition difficulties in elementary school.

There still is a long way to go in developing a comprehensive array of measures for screening, monitoring, and planning intervention, as well as a long way to go in developing assessment, intervention, and coordination systems that make full use of these measures. At this point, skilled and interested practitioners have some information to use, and they will have

to be deliberative and reflective as their work in this area unfolds. There is substantial room for contributions at the local level and in the growing body of knowledge about progress monitoring and RTI for young children, and future generations of young children (and the professionals who serve them) will benefit as this knowledge grows.

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- Presents a general description of procedures for developing and evaluating GOMs for preschool children and can be used by practitioners and researchers interested in adding to the measures currently available.
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- Describes growth and status on EL-IGDIs for four groups of children—typically developing, those living in poverty, those who speak Spanish as a primary language, and those with disabilities—and factors of their classroom experience associated with observed growth.

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Describes implementation of EL-IGDIs in a community-based setting.

WEB RESOURCES

Get it, Got it, Go!: ggg.umn.edu

Website for Preschool IGDIs. Background information on development and psychometric features of IGDIs can be viewed and downloaded, as well as administration instructions and stimulus materials (as well as supporting material) for assessment of individual children and management or graphing of individual or group results.

Research Institute on Progress Monitoring: progressmonitoring.org
Describes research and development updates in all aspects of GOMs, including research on IGDIs and their relation to later school success.

University of Minnesota, The College of Education and Human Development: <http://www.education.umn.edu/ceedhttp://www.education.umn.edu/ceed>

Ongoing research, development, and dissemination of preschool IGDIs with information on new tools and applications, as well as training opportunities.

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