Designing and Implementing an Early Literacy Screening Protocol: Suggestions for the Speech-Language Pathologist

Laura M. Justice
Marcia A. Invernizzi
Joanne D. Meier
University of Virginia, Charlottesville

ABSTRACT: The American Speech-Language-Hearing Association (2001) recently asserted that speech-language pathologists can and should play an important role in promoting literacy for young children with communicative impairments. Early literacy screening provides a valuable tool for speech-language pathologists to use for the timely detection of difficulties in literacy achievement. In addition, results of early literacy screening can be used to guide intervention and instruction. This article provides a rationale for incorporating early literacy screening into service delivery. It also makes recommendations for determining which children and what areas of literacy should be targeted in screening activities. Suggestions for interpreting findings are also provided, as are strategies for using screening to guide early literacy intervention.

KEY WORDS: early literacy, assessment, speech-language pathology in schools, role of the speech-language pathologist

Early literacy knowledge serves as the foundation for children’s subsequent attainment of conventional literacy abilities, including reading and writing. Generally speaking, these foundational skills are acquired by children within the period transcending birth to approximately 5 years of age; this time frame generally corresponds to the period preceding formal literacy instruction. For increasing numbers of children, formal literacy instruction begins in the kindergarten classroom, paving the way for more intensive instructional activities in first grade.

Early literacy knowledge is strongly and reciprocally influenced by children’s oral language proficiency (Boudreau & Hedberg, 1999; Chaney, 1992; Dickinson & Tabors, 1991; Lonigan et al., 1999; Maclean, Bryant, & Bradley, 1987). Preschool children who have difficulties acquiring oral language proficiency, such as children with specific language impairment (SLI) and children with phonological disorders, are at increased risk for delayed attainment of requisite early literacy skills (Bird, Bishop, & Freeman, 1995; Boudreau & Hedberg, 1999; Clark-Klein, 1991; Magnusson & Nacler, 1993). As a result, these children may enter kindergarten and/or first grade lacking adequate early literacy knowledge. This places these children at risk in their ability to meet the rigors of formal reading and writing instruction.

This sequence of events, in which children have difficulties achieving early literacy fundamentals and are thus subsequently unprepared for formal literacy instruction, may contribute to the relatively high incidence of reading problems for children with speech and/or language impairments (for discussion, see Blachman, 1991; Catts, 1991, 1993; Catts & Kamhi, 1986). Such circumstances argue the need for increased involvement by speech-language pathologists in promoting early literacy achievement for the children with whom they work.

This perspective was recently presented in a position statement of the American Speech-Language-Hearing Association (ASHA), titled “The Roles and Responsibilities of Speech-Language Pathologists With Respect to Reading and Writing in Children and Adolescents” (ASHA, 2001). A brief overview of several key points made in this important reference document is provided here. Readers are encouraged to consult the full source for a more complete description of the roles and responsibilities of speech-language pathologists with respect to literacy.

That speech-language pathologists can and should play an active role in literacy promotion for young children is
based on four principal arguments (ASHA, 2001): (a) Oral language provides the foundation for the development of literacy; (b) the relationship between oral language and literacy development is reciprocal in nature, with interconnections originating in early childhood; (c) children with speech and language impairments are at increased risk for difficulties with early and conventional literacy development; and (d) intervention for oral language can positively influence literacy development, and vice versa. The primary roles and responsibilities of speech-language pathologists with respect to literacy, as asserted by ASHA, encompass the following areas: prevention, identification, assessment, and intervention.

The potential for speech-language pathologists to meet these roles and responsibilities is driven by the issue of early identification. To prevent literacy problems and to ensure children’s timely achievement of key literacy skills, speech-language pathologists must use a protocol for identifying those children who should be targeted by advanced prevention and intervention efforts. Designing and implementing such a protocol, referred to herein as early literacy screening, can help one to identify children who are particularly at risk for later problems with literacy achievement both effectively and efficiently. It can also pave the way for more comprehensive assessment and intervention activities and provide critical baseline information for structuring literacy enhancement activities within direct therapy or through classroom-based consultation and collaboration.

The purpose of this article is to assert the need for speech-language pathologists to develop and implement a protocol for early literacy screening and to provide specific suggestions for doing so. This purpose is accomplished within the framework of six questions:

- What is the rationale for early literacy screening?
- Who should be screened for early literacy skills?
- What areas of literacy should be targeted?
- What are the essential features of a screening protocol?
- What are some options for interpreting screening findings?
- How can results from early literacy screening guide intervention?

As a summary, specific recommendations are provided for clinical practice.

Rationale for Early Literacy Screening

One of the most effective strategies for preventing reading difficulties is ensuring accurate and early identification of those children who are experiencing difficulties in attaining critical early literacy skills (Catts, Fey, Zhang, & Tomblin, 2001; Fawcett & Nicolson, 2000; Muter, 2000). This can be viewed as an approach that is at once proactive and preventive, such that the assessment of children’s early literacy performance may serve to identify those children who are most likely to experience later problems with conventional literacy.

A substantial literature base has suggested key variables that may help to identify those preliterate children who are most likely to experience subsequent difficulties with conventional literacy achievement (e.g., Badia, 1982, 2000; Catts, 1993; Catts, Fey, Zhang, & Tomblin, 1999; Stuart, 1995). This research base indicates, for instance, that measures of phonological awareness, alphabet knowledge, letter–sound knowledge, and other elements of early literacy (e.g., invented spelling, word awareness)—collected when children are between the ages of 3 and 5 or 6 years of age—serve as robust predictors of children’s later literacy achievement. Several indices of oral language skill, including vocabulary knowledge, grammatical performance, and narrative competence, have also been found to serve as key predictor variables in differentiating young children in terms of later literacy outcomes (Bird et al., 1995; Blachman, 1984; Catts, 1993; Catts et al., 2001; Menyuk et al., 1991). For instance, a recent work by Catts and colleagues (2001) indicated that a set of four variables encompassing both early literacy skills and oral language skills, in addition to a fifth variable representing socioeconomic status (and more specifically, maternal educational achievement), uniquely predicted the probability of later reading difficulties with 93% accuracy. The implication of these findings is that identification of and remediation for difficulties in these critical areas of early literacy can occur before children fail at reading.

For this proactive and preventive sequence of events to take place, screening of early literacy in the period preceding formal literacy instruction must occur. Stated another way, the prevention of literacy problems can be realized only if early literacy skills are assessed before children become immersed in the mechanics of conventional literacy instruction. By the time children enter first grade, they are expected to engage in instructional activities through which conventional literacy skills are taught (and indeed, these expectations are increasingly directed at kindergartners, as well). Children who are unable to maintain the pace of the beginning literacy curriculum and who experience early problems are, for the most part, likely to have ongoing problems with literacy achievement. To illustrate, a seminal work by Juel (1988) found that 88% of children who were poor readers at the end of first grade continued to be classified as poor readers at the end of fourth grade. Longitudinal studies have also shown that the gap in reading achievement between children with and without reading difficulties is remarkably stable over time, from first grade through high school (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1994, 1996). Such findings suggest not only the pervasive nature of early reading problems, but also the inherent difficulty of ameliorating problems once they occur.

Early literacy screening has been used increasingly by school divisions (operating on their own accord or in response to statewide mandates) to identify children who are demonstrating difficulties with early literacy achievement and who can thus be expected to have problems with later literacy achievement. In the Commonwealth of
WHO SHOULD BE SCREENED FOR EARLY LITERACY SKILLS

Speech-language pathologists can play a key role in prevention efforts by ensuring that children on their caseloads who may be experiencing difficulties in early literacy achievement are identified as such. Caseload constraints, including those associated with time and cost, curb the possibility and practicality of screening all of the children on one’s caseload. Additionally, the need to screen all children is contraindicated by studies suggesting that not all children with communicative impairments will experience literacy problems (e.g., Bird et al., 1995; Catts, 1993). Thus, careful consideration of who should receive early literacy screening is warranted. Clinical expertise (which includes a thorough knowledge of the literature base on early literacy) can guide decision making.

Fortunately, a growing research base has recognized risk factors that may be useful in identifying those children who should receive priority in early literacy screening. There is some evidence, for instance, indicating that children whose communicative difficulties are articulatory in nature are not particularly at risk for literacy problems (Bishop & Adams, 1990; Catts, 1993; Lewis & Freebairn, 1992; for review, see Scarborough, 1998). Articulation impairment, used here to refer to speech sound production problems originating from sensory, structural, or neuromotor deficits, can be differentiated from production problems resulting from deficits in the underlying knowledge of the rule-based system governing the sound structure of language (Bernthal & Bankson, 2000). Generally speaking, children whose communicative impairments, be they a problem with sound production or otherwise, appear linguistic in nature seem to be particularly vulnerable for early and later literacy problems (Bird et al., 1995; Bishop & Adams, 1990; Boudreau & Hedberg, 1999). For this heterogeneous group of children, decisions regarding the need to conduct screening can be made by considering the nature and history of the language impairment as well as the presence of associated risk factors.

- **Nature of the language impairment.** Children experiencing widespread or diffuse language problems (i.e., difficulties transcending aspects of syntax, semantics, and/or phonology) are at greater risk for literacy problems than children with isolated language difficulties (e.g., difficulties in only one domain) (Bishop & Adams, 1990). Specific language indices appearing most predictive of later reading achievement include measures of receptive vocabulary, expressive vocabulary, and grammatical comprehension and production (Bird et al., 1995; Catts, 1993; Catts et al., 1999; Scarborough, 1990; for review, see Scarborough, 1998). There is also some evidence (Bird et al., 1995; Catts et al., 1999) that difficulties in narrative comprehension and production may foreshadow difficulties in reading achievement, although the strength of this association has not been demonstrated consistently in the literature (e.g., Catts et al., 2001). Problems that are specifically phonological in nature do not necessarily place a child at risk for later literacy problems (Bishop & Adams, 1990; Catts, 1993; Scarborough, 1998). However, children exhibiting severe phonological impairment (characterized by a percentage of consonants correct [PCC; Shriberg & Kwiatkowski, 1982] of less than 50%) are at substantially greater risk for literacy problems than children with more moderate impairments (Bird et al., 1995).

- **History of the language impairment.** As might be expected, children entering kindergarten with a language impairment that is unresolved are more likely to struggle with literacy achievement than children whose language problems have resolved (Bird et al., 1995; Bishop & Adams, 1990). Whereas this is particularly true for children showing widespread language difficulties, it is also applicable to those children exhibiting problems in only one domain. For instance, children entering school with ongoing phonological impairment, whose problems are severe and/or who have a positive history of more widespread language problems, are at increased risk for literacy problems. As Bishop and Adams (1990) noted, many children with histories of widespread language problems present with impaired phonology only by school age (i.e., around 5 years of age). This suggests the need to consider not only the contemporary
features of a child’s language problems, but also the history of the impairment.

- **Presence of associated risk factors.** Risk factors that may occur concomitantly with language impairment and that may exacerbate the possibility of literacy problems can be differentiated into two categories: child-based and family-based risk factors. As described in Snow, Burns, and Griffin (1998), child-based risk factors are intrinsic to the child. In contrast, family-based risk factors are external to the child, present either in the household or the community in which the child resides.

Child-based factors may include the presence of attentional deficits (e.g., attention-deficit disorder), behavioral or conduct problems, and/or cognitive impairment. Recent work by Lonigan and colleagues (1999) showed that children who were inattentive, hyperactive, or prone to rule violations performed significantly less well on early literacy tasks than did children without such characteristics or behaviors. Likewise, cognitive impairment has also been linked to relatively poor early and later literacy outcomes (see Scarborough, 1998).

Family-based risk factors include exhibiting limited English proficiency (LEP), residing in a low-income household, having a parent with low educational attainment, or having a familial history of reading difficulty or disability. Children impacted by such circumstances often show less proficiency on early and conventional literacy tasks as compared to children from middle and upper income households (e.g., Chaney, 1994; Dickinson & Snow, 1987; Ezell, Gonzales, & Randolph, 1998; Scarborough, 1989; Warren-Leubecker & Carter, 1988). Of the family-based risk factors, both socioeconomic status (characterized either by level of maternal education or household income) and familial history of reading difficulty have emerged as particularly powerful predictors of literacy achievement (Catts et al., 2001; Scarborough, 1989, 2000). For instance, children of parents with reading impairment are four times more likely than other children to experience difficulties with reading achievement (Elbro, Borstrom, & Petersen, 1998).

Figure 1 provides a decision-making tree for use with children experiencing communicative impairments that are language-based (i.e., linguistic in nature). This may prove useful for identifying those children who should receive literacy screening priority.

### AREAS OF LITERACY THAT SHOULD BE TARGETED

The screening protocol should serve as a cost-effective and time-efficient way to identify children requiring additional assessment and instructional activities with respect to literacy. Screening thus need not examine all areas tied to later literacy achievement, but rather should systematically examine children’s skills in those areas that are most substantially predictive of long-term literacy success.

### Oral Language Correlates

There are numerous and myriad variables associated with early and conventional literacy outcomes. Although much of the recent literature on predictors of literacy achievement has emphasized early literacy fundamentals (described subsequently), it is important to recognize the significant interrelationships among early spoken language correlates and both early and later literacy outcomes. Scarborough’s (1998, 2000) reviews of the literature on the predictive value of early language abilities for early and later literacy outcomes have suggested that early spoken correlates are consistently related to early literacy abilities, and that later literacy skills are generally well predicted by combining several sets of language variables. These variables include receptive and expressive vocabulary and morphosyntactic production and comprehension. Importantly, Scarborough’s meta-analyses have shown that spoken language skills are more highly predictive of later literacy outcomes than many of the risk factors commonly associated with poor literacy skills, including frequency of parent–child shared book reading, home literacy environment, preschool literacy interest, and family socioeconomic status.

The strong associations between spoken language abilities and literacy outcomes have also been demonstrated through investigations of the language histories of children with and without reading difficulties. Scarborough (2000) reported that, despite some exceptions to the rule, children with a history of early language impairment are at high risk for later reading difficulties. Likewise, Catts and colleagues (1999) recently found that 57% of 183 children who were characterized as poor readers in second grade (i.e., children performing more than one standard deviation below the mean [-1 SD] on a reading composite) had experienced deficits in receptive language ability in kindergarten. Receptive language deficits were characterized as performance of –1 SD on a composite measure of vocabulary knowledge, grammatical understanding, and narrative comprehension. Microanalyses showed that 56% of poor readers had grammar deficits, 44% had deficits in narrative comprehension, and 39% had deficits in receptive vocabulary.

Findings such as these argue the critical role that oral language correlates play in literacy achievement and indicate the need for speech-language pathologists to consider children’s linguistic skills in early literacy screening decision making (see Figure 1). It is presumed, however, that advanced knowledge of children’s language skills will have occurred prior to making early literacy screening decisions, that is, during speech/language eligibility determination.

### Early Literacy Targets

Early literacy screening as a tool for early identification of literacy problems is used to construct a general profile
Figure 1. Decision-making tree for determining the need for early literacy screening for children with language-based communicative impairments.

**STEP 1**
Nature of language impairment

- Impairment transcends two or more language domains?
  - If YES, conduct EL screening.
  - If NO, continue to STEP 2.

**STEP 2**
History of language impairment

- Impairment present at 5 years of age?
  - If YES, conduct EL screening.
  - If NO, continue to STEP 3.

**STEP 3**
Associated risk factors

- One or more associated risk factors present?
  - If YES, conduct EL screening.
  - If NO, informally monitor early literacy knowledge.

*Associated risk factors include attentional deficits, behavioral or conduct problems, cognitive limitations, limited English proficiency, residing in a low-income household, having a parent with low educational achievement, and/or having a familial history of reading difficulty or impairment.

of children’s early literacy skills to identify those children who may require additional assessment and intervention. The importance of language correlates notwithstanding, specific areas of performance relating most significantly to literacy outcomes can be divided into six general categories: (a) written language awareness, (b) phonological awareness, (c) letter name knowledge, (d) grapheme-phoneme correspondence, (e) literacy motivation, and (f) home literacy. The first five distinctions represent processes that are characteristically internal to the child (albeit influenced by opportunity and instruction); the latter represents environmental or external influences. Each appears to contribute in unique although highly interrelated ways to literacy achievement, and thus observation of each should occur in the screening protocol.

- **Written language awareness.** Written language awareness is a broad term capturing an array of knowledge related to children’s implicit and explicit awareness of fundamental properties of written language (Justice & Ezell, 2001b). Such awareness includes recognizing the communicative function of written language, the relationship between print and speech, and print-specific fundamentals, such as left-to-right directionality and relationships between written language units (e.g., that letters make up words, that words make up sentences, and so forth). Written language awareness also encompasses a child’s ability to recognize environmental or situationally dependent print (i.e., logos and signs) and a child’s knowledge of how to interact with printed materials (e.g., story books). A number of studies have shown that preschool children show gradual increases in their awareness of written language (e.g., Chaney, 1992; Lomax & McGee, 1987), and that such understanding contributes to and is predictive of later reading ability (Scarborough, 1998; Stuart, 1995). The informal checklist depicted in the Appendix provides an overview of many skills that are representative of written language awareness.

- **Phonological awareness.** Phonological awareness refers to one’s ability to represent spoken language as
comprising discrete and recurrent sound elements (including phonemes, syllables, and words). It is one of the most powerful predictors of later reading achievement (e.g., Bradley & Bryant, 1983; Bryant, Maclean, Bradley, & Crossland, 1990; Catts et al., 1999, 2001; Scarborough, 1998). Developing gradually during the preschool and early elementary period, children progress along a continuum representing shallow to deeper levels of awareness (Stanovich, 1986, 2000). Early attainments in phonological awareness include comprehending and producing rhyme and alliteration at the whole-word level and recognizing the intra-syllabic boundaries of words (Lonigan, Burgess, Anthony, & Barker, 1998). Later attainments include segmenting and manipulating words at the level of the phoneme (Fox & Routh, 1984). Phonemic awareness represents the deepest level of phonological awareness (Stanovich, 1986, 2000), whereby children are able to represent individual words and syllables consciously as comprising discrete phonemic segments.

- **Letter name knowledge.** Children’s knowledge of individual letter names has also been identified as one of the foremost predictors of later reading achievement (Blatchford, Burke, Farquhar, Plewis, & Tizard, 1987; Catts et al., 2001; Johnston, Anderson, & Holligan, 1996). Adams (1990) asserted that rapid and accurate identification of letters is the single most important predictor of later reading success, based on her findings from a comprehensive review of the literature. Moreover, there is some evidence suggesting that explicit awareness of phonemes develops subsequent to children developing accurate representations and names of individual alphabet letters (e.g., Johnston et al., 1996), thereby asserting the primacy of the alphabetic principle in children’s early literacy development. The extent to which children possess robust representations of letter names, as observed through rapid automatic letter naming tasks, is also substantially related to reading ability. Blachman (1984), for instance, found a significant and strong relationship \( r = .67 \) between first graders’ rapid naming of alphabet letters and their performance on standardized reading tests. Although the relationship between rapid naming and reading achievement is likely bidirectional, such findings suggest that the extent to which representations of individual alphabet letters have been internalized and automated is a particularly important component of early literacy achievement.

- **Grapheme–phoneme correspondence.** This term refers to one’s ability to accurately represent the distinct relationship between individual letters and sounds (i.e., sound-symbol relationships). Grapheme–phoneme correspondence represents a critical achievement that is strongly tied to reading success. Clearly, skills of this order are reciprocally related to letter name knowledge and phonemic awareness, and to this end, such knowledge is generally not acquired by children until the later stages of early literacy development, that is, after prerequisite skills in written language awareness, phonological awareness, and letter name knowledge have been acquired. Some preschool and kindergarten children demonstrate emergent levels of grapheme–phoneme correspondence, and tend to do so for letters and sounds that are highly familiar and meaningful to them (e.g., those in their own names). This knowledge is usually attained through direct instruction from parents or teachers. Training studies have revealed that helping children to develop accurate representations of the systematic relationship between letters and sounds facilitates reading achievement (Fox & Routh, 1984; Vellutino & Scanlon, 1987), thereby implicating the important relationship between accurate representations of phoneme–grapheme relationships and reading ability.

- **Literacy motivation.** Literacy motivation describes children’s interest in or orientation toward early literacy experiences. One recent study found that self-reported interest in literacy activities accounted for a significant amount of variance in kindergartners’ letter name knowledge and grapheme–phoneme correspondence (Frijters, Barron, & Brunello, 2000). Other studies, including work by Crain-Thoreson and Dale (1992) and Scarborough and Dobrich (1994), have also supported the role that “print motivation” plays in children’s development of early literacy. Studies such as these have found significant interrelationships between measures of print motivation (e.g., ratings of children’s engagement in literacy activities, interviews with parents regarding children’s literacy-related activities and interests) and children’s performance on early literacy tasks. These findings argue the critical association between motivation or interest and children’s early literacy attainment. Of particular importance is the fact that children with language impairment more frequently exhibit low motivation toward literacy than their peers without impairment (Kaderavek & Sulzby, 1998).

- **Home literacy.** There is ample evidence indicating the critical role the home environment plays in supporting children’s attainment of early literacy skills (e.g., Cunningham & Stanovich, 1991; Frijters et al., 2000; Scarborough, Dobrich, & Hager, 1991). Important factors influencing children’s early literacy development include frequency of parent–child shared book reading, parental interest and engagement in literacy activities of their own, and children’s access to literacy materials. To illustrate, Scarborough et al. (1991) found that the frequency of parent–child shared book reading experiences during the preschool years was significantly related to children’s reading outcomes in second grade. A number of authors have thus asserted that a child’s home literacy environment is one of the most crucial variables contributing to the development of early literacy (e.g., Frijters et al., 2000; Mason, 1980; Snow et al., 1998). Children who have only infrequent experiences with literacy...
materials or literacy activities (e.g., book reading) tend to display lower levels of early literacy skill than children with more frequent exposure and experiences (Chaney, 1994; Raz & Bryant, 1990). There is some evidence suggesting that young children with communicative impairments (particularly those whose problems are severe) may experience fewer home-based literacy experiences than their peers without impairment (Marvin & Mirenda, 1993).

**Screening as a Snapshot in Time**

It is particularly critical to recognize that screening a child’s skills or experiences in any one or all of these areas at a particular point in time provides only a cursory and generalized portrait of performance. Screening provides neither evidence nor knowledge of the dynamic interplay among literacy skills and experiences and is conducted for one very specific purpose: to identify children requiring more intensive assessment and intervention activities. Three points warrant mention, all of which assert the need to view screening findings as a single snapshot in time and to ensure that children requiring follow-up activities are indeed provided with these services.

- There is emerging evidence that literacy development, like language acquisition, is nonlinear in nature. For this reason, the robustness of associations among literacy skills and experiences varies at different points in time (Scarborough, 2000).
- Each of these areas of literacy skill and experience is particularly amenable to change, whether through intervention or as a function of other extraneous or internal forces (e.g., Justice & Ezell, 2000; Whitehurst et al., 1994).
- Most important, children’s performance in each of the screening areas is intimately tied to cultural experiences and expectations, at home and at school; likewise, culture also appears to influence the predictive relationships between early literacy skills and later literacy outcomes (Dickinson & McCabe, 2001).

Taken together, these points indicate the need to view the early literacy indicators included in screening as dynamic rather than static variables. In other words, each of the early literacy areas to be included in screening has been found to be associated with literacy outcomes, and all are viewed as important elements of the early literacy construct; nevertheless, screening results are not meant to provide an understanding of the complex and multidirectional interrelationships among such elements. This, of course, is the goal of advanced efforts in literacy assessment and intervention.

### Essential Features of a Screening Protocol

The “perfect” screening instrument does not yet appear to exist, particularly when considering the need for the protocol to address the six areas previously identified (i.e., written language awareness, phonological awareness, etc.). However, there are myriad avenues available for devising and implementing an effective and efficient early literacy screening protocol. The following guidelines can assist with protocol development decisions.

#### Essential Features

The screening protocol should exhibit three essential features: (a) psychometric quality, (b) comprehensiveness, and (c) sensitivity. These features are especially important when considering the use of commercially available screening instruments as part of the protocol.

**Psychometric quality.** Empirical confirmation of the psychometric caliber of a particular task or test should be demonstrated before it is used to screen for early literacy. At the very least, an early literacy screening task or test should demonstrate adequate levels of construct validity, predictive validity, inter-rater reliability, and test–retest reliability. These qualities represent the extent to which (a) tasks or tests accurately represent the early literacy construct (construct validity), (b) performance is predictive of later literacy achievement (predictive validity), (c) two or more raters agree on qualitative or quantitative scoring of children’s performance (inter-rater reliability), and (d) children’s performance is consistent over time or repeated administrations (test–retest reliability). For commercially available tests, evidence for these qualities can be determined through careful scrutiny of administrative or technical manuals. Hutchinson (1996) provided an excellent overview of key questions to be used when surveying technical manuals to evaluate psychometric quality. Selecting a screening tool that demonstrates such qualities should be an important a priori consideration.

**Comprehensiveness.** A comprehensive early literacy screening protocol includes tasks examining children’s skills in those areas that are most reliably and significantly tied to later literacy achievement: written language awareness, phonological awareness, letter name knowledge, grapheme–phoneme correspondence, literacy motivation, and home literacy. A screening protocol that does not comprehensively examine all such characteristics may be ineffective for identifying children who display limitations or needs in a particular area of early literacy. This defeats the purpose of screening. For instance, some children may exhibit adequate skills in naming individual letters of the alphabet but lack skills in phonological awareness. A protocol that does not include any phonological awareness tasks, or one that employs phonological awareness tasks that are not valid or sensitive indices of performance, would obviously be of little use in identifying children whose early literacy difficulties lie within this realm of performance. As a rule of thumb, an early literacy screening instrument should be selected that is comprehensive enough to identify those children who may exhibit deficits in a highly specific area of early literacy (such as phonological awareness or letter name knowledge). However, it may not be efficient or effective to select an instrument that is too wide in its scope (i.e., that includes redundant
tasks or tasks having little direct relationship to later literacy outcomes).

**Sensitivity.** A particularly important consideration in designing the early literacy screening protocol is that it be able to differentiate those children who are at risk for literacy problems from those who are not. Using a protocol that is not sensitive can substantially and negatively impact the effectiveness of early literacy screening by not identifying those children who require enhancement in a particular area of early literacy. This feature relates both to psychometric quality (i.e., Does the protocol or task demonstrate predictive validity?) and comprehensiveness (i.e., Does the protocol examine an array of skills that are most significantly related to later literacy achievement?). However, demonstration of the sensitivity of particular early literacy tasks or tests can only be confirmed through field studies.

Fawcett and Nicolson (2000) noted that the ideal early literacy screening protocol would have a “hit rate” of 100% and a “miss rate” of 0%. This means that the protocol would identify children who are at risk with 100% accuracy (the hit rate) and identify no children as at risk who have acceptable levels of skill (the miss rate). Unfortunately, few tasks or tests can ever perform this optimally. Nevertheless, careful consideration of available empirical evidence regarding the extent to which a particular task or test demonstrates sensitivity in field studies is paramount when developing the screening protocol. Tasks or tests for which no data are available regarding sensitivity should be used with caution, and whenever possible should be supplemented by measures exhibiting appropriate levels of sensitivity.

**Building the Screening Protocol**

Thus, the screening protocol should exhibit adequate psychometric quality, be of a comprehensive nature, and demonstrate appropriate levels of sensitivity. Designing a screening protocol reflecting each of these essential characteristics requires careful research and a series of important decisions guided by the population(s) being served. For instance, a protocol used solely with preschool children would differ from that used with kindergarten children; likewise, a protocol used only with kindergarten children with communicative impairments would differ from that used with all kindergartners in a particular school or district. Regardless, the screening protocol likely will incorporate one or more commercially available instruments as well as several clinician-designed tasks.

**Commercially available instruments.** Certainly, it would seem that the easiest and most efficient route to implementing a screening protocol would be the use of a commercially available screening tool. Unfortunately, there are presently few instruments meeting the essential features of psychometric quality, comprehensiveness, and sensitivity. Indeed, the greatest limitation of most commercially available instruments is that of comprehensiveness: Few tests survey the broad spectrum of early literacy skills appearing most important for identifying at-risk children. This, in turn, may detract from the effectiveness of screening. Although it is certainly possible to combine several tests for use in the screening protocol, care needs to be taken so as to not defeat the purpose of screening (i.e., screening should be both effective and efficient, thereby reaching as many children as possible).

Table 1 provides an overview of several commonly used commercial instruments; all of these instruments can be used with kindergarten children. This table includes information on the extent to which these instruments meet the essential features of psychometric quality, comprehensiveness, and sensitivity, as indicated by administration manuals. It is important to recognize that although a number of these tests have been or are currently used to screen for early literacy, many were not developed for the purpose of screening. Rather, these instruments were developed to provide an index of children’s skills in particular literacy areas, as part of a larger developmental battery. The implication here is that many of these instruments were not developed for the express purpose of early identification. Exceptions to this rule include the Dyslexia Early Screening Test (DEST; Nicolson & Fawcett, 1996), the Phonological Awareness Literacy Screening: Kindergarten (PALS–K; Invernizzi, Meier, Swank, & Juel, 1999), the Pre-Literacy Skills Screening (PLSS; Crumrine & Longeneck, 1999), and the Test of Phonological Awareness (Torgesen & Bryant, 1994). These instruments were developed to serve specifically as early literacy screening tools. The DEST, it should be noted, was developed in the United Kingdom. Although this instrument appears promising with respect to early identification, psychometric quality and sensitivity have not been evaluated in the United States.

Few instruments are available for the screening of preschool children. Although there are numerous reasons for this (e.g., preschool children are not particularly amenable to formal testing conditions), the importance of screening preschoolers for early literacy attainment cannot be understated: that is, these are the critical years in which literacy precursors are achieved. Two instruments that are currently available that can be used for preschool screening are the Phonological Awareness Literacy Screening–Pre-Kindergarten (PALS–PreK; Invernizzi, Sullivan, & Meier, 2001) and the Test of Early Reading Ability–2 (TERA–2; Reid, Hresko, & Hammill, 1989). PALS–PreK is a criterion-referenced downward extension of the PALS–K (Invernizzi et al., 1999). Subtests include phonological awareness (rhyme awareness and beginning sounds), alphabet knowledge (lower- and uppercase), written language awareness (print knowledge and concept of word), and name writing. Field studies of psychometric quality are currently underway. The TERA–2 is a standardized test that can be used with children as young as 3 years of age. This instrument is not divided into subtests; rather, children’s skills across a variety of literacy areas (e.g., alphabet knowledge, print conventions) are sampled.

Any of the instruments listed in Table 1 can potentially be used as a component of a speech-language pathologist’s screening protocol. Offering particular promise are those for which data are available on psychometric quality, comprehensiveness, and sensitivity. Nevertheless, none of these instruments was designed specifically to examine...
early literacy in children with communicative impairments, and thus may not be sensitive to the unique characteristics of this population. In addition, none of these instruments is truly comprehensive (by the standards set forth in this article), in that they do not examine literacy motivation or home literacy. Indeed, several examine only a few discrete skill components. For instance, as its name indicates, the Test of Phonological Awareness (Torgesen & Bryant, 1994) examines only phonological awareness. To this end, many of these commercially available instruments will need to be combined with other tasks or tests devised by the speech-language pathologist.

Clinician-designed tasks. Many researchers and practitioners have often employed informal tasks for screening young children’s early literacy abilities. Several of the more common tasks that have been described in the literature appear in Table 2. This practice has been prevalent primarily because commercial screening instruments have only recently become available and have some practical limitations. As discussed earlier, some practitioners or researchers may view many of the commercially available instruments as limited in the extent to which they target areas of particular interest. Justice and Ezell (2001a), for instance, recently designed a criterion-referenced procedure to examine specific elements of preschool children’s written language awareness. An instrument similar in focus is Clay’s (1979) “Concepts about Print,” a criterion-referenced procedure for assessing written language awareness and early reading skills in school-age children struggling with reading. Although neither was designed strictly for screening purposes, tools such as these may be adapted for use in a screening protocol. Clinician-designed tasks are used in screening to target specific areas of interest and to design a protocol that is truly comprehensive. Although the development of screening tasks may seem a daunting enterprise, speech-language pathologists frequently design tasks and tools such as questionnaires, observational checklists, and criterion-referenced tasks to serve particular clinical purposes (e.g., to monitor ongoing progress towards treatment goals). Criterion-referenced tasks seem particularly amenable for use in an early literacy screening protocol. These are used to examine a particular area of performance against an implicit or explicit performance benchmark. Unlike the formalized test procedures that are common to many commercially available instruments, clinician-designed criterion-referenced tasks are designed in accordance with the specific needs or characteristics of a particular child or clinical population. Clinicians can develop tasks that are sensitive to the response modalities of children with communicative impairments, for instance, that take into consideration the influence of phonological precision in scoring responses. Paul (2001) provided an exemplary description of criterion-referenced task design. Important design characteristics include controlling linguistic stimuli, avoiding over-interpretation of performance, and specifying appropriate responses.

The use of clinician-designed tasks for early literacy screening, particularly criterion-referenced tasks, appears advantageous for several reasons:

• There are few if any costs associated with this approach. Clinicians or teachers can develop screening tasks using readily available materials within the clinic or classroom.
Table 2. Examples of clinician-designed tasks for screening early literacy.

<table>
<thead>
<tr>
<th>Target</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Written language awareness</strong></td>
<td>1. The child is presented with a series of tasks during a shared book</td>
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<tr>
<td></td>
<td>reading activity to assess his or her knowledge of print and book</td>
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<td></td>
<td>reading conventions (e.g., print directionality, functions of book</td>
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<td></td>
<td>elements [cover page, title, etc.]). For example, the child is</td>
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<td></td>
<td>instructed to “show me the front of the book,” “show me just one</td>
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<td></td>
<td>word,” or “show me where I begin to read” (Clay, 1979; Justice &amp;</td>
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<tr>
<td></td>
<td>Ezell, 2000).</td>
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<tr>
<td></td>
<td>2. The child is asked to read words that are common to his or her</td>
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<td></td>
<td>environment (e.g., logos, labels, signs); words are presented in a</td>
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<tr>
<td></td>
<td>continuum from highly contextualized to decontextualized (Gillam</td>
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<tr>
<td></td>
<td>&amp; Johnston, 1985).</td>
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<tr>
<td></td>
<td>3. The child is asked to differentiate printed depictions of various</td>
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<td></td>
<td>written language units, including word, letter, number, and sentence</td>
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<tr>
<td></td>
<td>(Lomax &amp; McGee, 1987).</td>
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<tr>
<td><strong>Phonological awareness</strong></td>
<td>1. The child is asked to detect one word from a set of three words</td>
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<td></td>
<td>that differs on the basis of a common phoneme or rhyme. For</td>
</tr>
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<td></td>
<td>example, the child is asked to identify the odd word from the set</td>
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<td></td>
<td>fish/dish/book (rhyme detection) or bed/hair/hell (alliteration</td>
</tr>
<tr>
<td></td>
<td>detection) (Maclean, Bryant, &amp; Bradley, 1987).</td>
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<tr>
<td></td>
<td>2. The child is asked to produce words starting with a target phoneme</td>
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<td></td>
<td>or rhyming with a target word. For example, the child is asked to</td>
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<tr>
<td></td>
<td>“tell me a word that starts with /m/” or “tell me a word that</td>
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<tr>
<td></td>
<td>rhymes with hat” (Chaney, 1992).</td>
</tr>
<tr>
<td></td>
<td>3. The child is asked to delete a sound from a target word. For</td>
</tr>
<tr>
<td></td>
<td>example, the child is asked to say “bat without the /b/” (Lonigan,</td>
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<td></td>
<td>4. The child is asked to “break a word apart” into its component</td>
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<td></td>
<td>pieces. For example, the child is asked to say all the parts of the</td>
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<td>words go or ride (Yopp, 1988).</td>
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<td></td>
<td>5. The child is asked to identify the number of phonemes in a target</td>
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<td></td>
<td>word. For example, the child is asked to tap out the number of</td>
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<td></td>
<td>sounds contained in the word bat (Liberman, Shankweiler, Fischer,</td>
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<tr>
<td></td>
<td>&amp; Carter, 1974).</td>
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<tr>
<td><strong>Letter name knowledge</strong></td>
<td>1. The child is presented with a series of upper- or lowercase letters</td>
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<td></td>
<td>and is asked to say the name of each letter (expressive task) or to</td>
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<td></td>
<td>point to a letter as its name is spoken by an examiner (receptive</td>
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<tr>
<td></td>
<td>task) (Justice &amp; Ezell, 2000).</td>
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<tr>
<td></td>
<td>2. The child is asked to recite the alphabet (Felton, 1992).</td>
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<td></td>
<td>3. The child is presented with a chart of all of the alphabet letters</td>
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<td></td>
<td>and is asked to name the letters as fast as he or she can (this task</td>
</tr>
<tr>
<td></td>
<td>measures rapid letter naming ability; Blachman, 1984).</td>
</tr>
<tr>
<td><strong>Grapheme-phoneme correspondence</strong></td>
<td>1. The child is shown an alphabet letter and is asked to produce the</td>
</tr>
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<td></td>
<td>sound that “goes with the letter;” or is provided a sound and is</td>
</tr>
<tr>
<td></td>
<td>asked to name the letter that “goes with the sound” (Juel, 1988).</td>
</tr>
<tr>
<td><strong>Literacy motivation</strong></td>
<td>1. The child is shown pictures of literacy events (e.g., a child</td>
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<td>reading) and is asked to indicate if this is a happy or sad event by</td>
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<td>pointing to a smiling or frowning face (Frijters, Barron, &amp; Brunello,</td>
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<tr>
<td></td>
<td>2000).</td>
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<td></td>
<td>2. The child is engaged in a variety of literacy tasks (e.g., book</td>
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<td></td>
<td>reading, writing) and his or her level of engagement is described</td>
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<tr>
<td></td>
<td>from a continuum from no or low engagement to high engagement</td>
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<tr>
<td></td>
<td>(Kaderavek &amp; Sulzby, 1998).</td>
</tr>
<tr>
<td><strong>Home literacy</strong></td>
<td>1. Parents are administered a checklist or questionnaire regarding</td>
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<td>home literacy materials and activities to determine the child’s</td>
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<td></td>
<td>access to and participation in such events (Allen &amp; Mason, 1989;</td>
</tr>
<tr>
<td></td>
<td>2. A home visit is conducted by which to ascertain the frequency and</td>
</tr>
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<td></td>
<td>nature of home literacy opportunities (e.g., Dickinson &amp; Tabors,</td>
</tr>
</tbody>
</table>
• Practitioners can develop screening tasks that target those areas of early literacy that they feel are most critical to later literacy success, or that are most aligned with their classroom, school, or district priorities.

• Such measures can be quite useful for examining children’s skills in areas that typically are not captured by more traditional avenues of testing, such as children’s motivation for literacy tasks or features of the home literacy environment.

• Tasks may also be useful for developing profiles of children’s early literacy abilities prior to, during, and following intervention activities.

Nonetheless, it is also important to recognize that there are key limitations in using such skill indices.

• Such tasks may not validly represent children’s skills and may be limited in other key psychometric qualities (e.g., inter-rater and test–retest reliability).

• By their very nature, criterion-referenced tasks are not comprehensive: that is, they are designed to look at a particular area of performance. Thus, in designing the literacy screening protocol, a series of criterion-referenced tasks encompassing the key areas of literacy would need to be developed.

• Without considerable knowledge of how children at various ages and stages generally perform on such skill indices, interpretation of children’s performance on criterion-referenced tasks may be difficult. This limitation can be avoided by developing local norms that have been developed by testing children and working collaboratively with parents, teachers, and administrators.

• Most important, criterion-referenced tasks may not demonstrate acceptable levels of sensitivity; that is, the ability to differentiate children who exhibit deficits in early literacy attainment from those with acceptable skills.

Although the psychometric quality and sensitivity of many of the tasks presented in Table 2 have been supported in the literature, for the most part, such studies have been confined to examining the performance of typically developing children.

The many benefits of criterion-referenced procedures and other clinician-designed tools such as questionnaires and observational checklists assert their place in the early literacy screening protocol. Specific tasks can be designed to reflect the specific needs and characteristics of children on one’s caseload. However, because there are several limitations to such procedures, the screening protocol should not be conducted solely through clinician-designed tools. Rather, these tasks can be used to complement other instruments to arrive at a psychometrically robust, comprehensive, and sensitive screening protocol.

The right combination: A protocol example. As stated earlier, the objective of early literacy screening is to identify children who should be targeted for advanced prevention and intervention efforts. To ensure that this objective is met, it is likely that the screening protocol would best be served by a combination of tools. The protocol may consist, for instance, of several psychometrically robust subtests from a criterion- or norm-referenced commercially available instrument supplemented by several clinician-designed observational and/or criterion-referenced tasks or instruments.

Table 3 provides an example of such a protocol, this one designed for children of preschool age. This protocol employs (a) five formal criterion-referenced subtests from two commercially available screening tests, the Name Writing and Upper-Case Alphabet Knowledge tasks of the PALS–PreK (Invernizzi et al., 2001) and the Rhyming Production, Sentence Segmentation, and Initial Sound Isolation tasks from the Phonological Awareness Test (PAT; Robertson & Salter, 1997), (b) one informal criterion-referenced procedure for assessing written language awareness during a shared book reading task (Preschool Word and Print Awareness task, Justice & Ezell, 2001a), and (c) two clinician-designed procedures, one for evaluating motivation toward and interest in literacy activities and the other for evaluating home literacy. The motivation screening, based on a protocol described by Kaderavek and Sulzby (1998), involves rating a child’s engagement in two classroom-based literacy activities, one large-group and another one-on-one, using a Likert-type scale ranging from 0 (no engagement) to 4 (total engagement). The home literacy screening involves providing parents with a 10-item questionnaire concerning the frequency of parent–child shared book reading, availability of literacy materials in the home, and their children’s interest in home-based literacy activities. The entire screening, consisting of six tasks and a single classroom observation (administration of the parent questionnaire notwithstanding), can be administered in approximately 30 minutes. Children’s performance on the PALS–PreK tasks is evaluated against published benchmarks; performance on all other tasks requires the development and use of local norms and standards.

OPTIONS FOR INTERPRETING SCREENING FINDINGS

Children’s performance on early literacy screening tasks (whether using commercially available or clinician-designed tasks, or a combination of both) can be interpreted in three ways: (a) comparing children’s performance to grade-based expectations, (b) comparing children’s performance against district-level or statewide expectations or performance mandates, and (c) comparing children’s performance to local norms. When interpreting children’s performance and making screening decisions, it is important to ensure that any test or task accommodations made during screening are identified because they can influence the accuracy of interpretation.

Grade-Based Interpretation

Both early and later literacy achievement is mediated to a large extent by instructional experiences. For instance, in
some school districts, children receive formalized literacy instruction in preschool and in kindergarten, whereas in other districts, formalized literacy instruction does not commence until first grade. Because of such discrepancies in experiences and exposure, children’s literacy performance is best interpreted against grade-level (e.g., preschool, kindergarten) rather than age-level expectations.

Several wide-scale assessments of children’s early literacy knowledge have been conducted in recent years. The University of Virginia, in conjunction with the Virginia Department of Education, has conducted one of the most comprehensive evaluations of this sort. As has been noted, screening of children’s early literacy knowledge occurs on a statewide basis for Virginia’s children at entrance to kindergarten, and biannual screening of early literacy performance continues through the end of third grade. Assessment is conducted by classroom teachers and other school personnel (e.g., speech-language pathologists, reading specialists) using PALS–K, a kindergarten screening instrument (Invernizzi et al., 1999). Results of this statewide endeavor provide some means for interpreting early literacy performance.

In the fall of 2000, 74,054 kindergarten children in 4,269 classrooms from 129 school divisions in the Commonwealth of Virginia were administered PALS–K by classroom teachers and other school personnel following video training in the screening protocol. The mean age of screening participants was 5;6 (years;months). The participants represented a range of ethnic groups (e.g., 3% were Asian, 5% were Hispanic or Latin American, 28% were African American, 62% were Caucasian, and 2% other), socioeconomic strata (e.g., 50% of the children came from high-poverty school divisions, based on the average percentage of children eligible to receive lunch at a free or reduced price), and special education backgrounds (e.g., 5% received speech and language services, 3% received Title I services, and 2% received English as a Second Language services). To this end, data obtained from this wide-scale screening represent the range of skills displayed by a diverse population of kindergarten children.

Children were administered an array of early literacy tasks, including rhyme awareness (matching words on the basis of rhyme), beginning sound awareness (matching words on the basis of initial phonemes), letter name knowledge (naming all lowercase alphabet letters), and letter sound knowledge (identifying sounds corresponding to particular letters). An overview of kindergarten children’s performance on specific PALS–K subtests is presented in Table 4. What these data indicate is that, on average, kindergartners can, after 6–10 weeks of kindergarten instruction, (a) match pictures on the basis of rhyme with nearly 80% accuracy, (b) match pictures on the basis of initial phonemes with almost 70% accuracy, (c) name approximately 17 of the 26 alphabet letters (lower case), and (d) identify phonemes corresponding with particular letters for 10 of the 26 alphabet letters. In short, kindergarten children (2–3 months into the school year) exhibit fairly sophisticated levels of skill with respect to rhyme.

### Table 3. An example of a preschool early literacy screening protocol (for children 4 to 5 years of age).

<table>
<thead>
<tr>
<th>Target</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written language awareness</td>
<td>Preschool Word and Print Awareness task (Justice &amp; Ezell, 2001a)</td>
</tr>
<tr>
<td></td>
<td>Name Writing task of the Phonological Awareness Literacy Screening–PreK (Invernizzi, Sullivan, &amp; Meier, 2001)</td>
</tr>
<tr>
<td>Phonological awareness</td>
<td>Rhyming Production, Sentence Segmentation, and Initial Sound Isolation tasks of the Phonological Awareness Test (Robertson &amp; Salter, 1997)</td>
</tr>
<tr>
<td>Letter name knowledge</td>
<td>Upper-Case Alphabet Knowledge of the PALS–PreK (Invernizzi et al., 2001)</td>
</tr>
<tr>
<td>Grapheme–phoneme correspondence*</td>
<td><strong>Literacy motivation</strong> Classroom observation (2 activities) with Likert-type rating (Kaderavek &amp; Sulzby, 1998)</td>
</tr>
<tr>
<td>Home literacy</td>
<td>Parent questionnaire</td>
</tr>
</tbody>
</table>

*Grapheme–phoneme correspondence tasks typically are not administered to preschool children.

### Table 4. Kindergarten benchmarks for the fall from statewide administration of the Phonological Awareness Literacy Screening: Kindergarten (N = 74,054).

<table>
<thead>
<tr>
<th>Subtest</th>
<th>1 SD</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhyme Awareness (10)</td>
<td>5.37</td>
<td>8.28</td>
</tr>
<tr>
<td>Beginning Sound Awareness (10)</td>
<td>4.59</td>
<td>7.35</td>
</tr>
<tr>
<td>Alphabet Knowledge (26)</td>
<td>9.22</td>
<td>17.31</td>
</tr>
<tr>
<td>Letter-Sound Knowledge (26)</td>
<td>2.35</td>
<td>9.68</td>
</tr>
<tr>
<td>Spelling (20)*</td>
<td>0.30</td>
<td>5.77</td>
</tr>
</tbody>
</table>

*Five three-phoneme words were scored for number of phonemes represented phonetically. One bonus point was awarded for correct spelling (Invernizzi & Robey, 2001).
and alliteration awareness (aspects of phonological awareness), alphabet knowledge, and phoneme–grapheme correspondence.

Complementary data have also been provided by the National Center for Education Statistics (U.S. Department of Education, 1999). Employing parent interviews to assess the early literacy skills of 8,549 preschool children, this wide-scale investigation reported that 28% of 4-year-olds and 36% of 5-year-olds are able to recognize all alphabet letters. Data also indicated that 70% and 87% of 4- and 5-year-old children are able to write their name, respectively.

These figures may be helpful in interpreting results obtained from early literacy screening by indicating those skills that are typically observed in children at the start of kindergarten. Results of such wide-scale data collection efforts have shown that kindergarten children are generally able to categorize some words on the basis of rhyme or alliteration (initial sound matching across words), write their names, and identify some letters of the alphabet. If screening suggests that a child does not exhibit such skills, at even rudimentary levels, the need for further assessment and increased instruction would be indicated.

Although interpretation of children’s performance against such national or statewide data sets may be useful, there are limitations in using these data in this way. First, the specific tasks or collection procedures that were used in generating these data may differ substantially (or at least enough to invalidate comparisons) from the tasks and procedures used in screening. Second, because of the diverse range of experiences of children across the nation, such data sets (e.g., those representing students in Virginia) may not be representative of the experiences of children across the nation.

These limitations suggest the need for caution when using findings from large-scale data sets to interpret the early literacy behaviors of children in a particular classroom, school, or district. In other classrooms, for both theoretical and practical reasons, children have substantially less exposure to these sorts of tasks.

Interpretation Against Performance Standards and Mandates

Results of screening may also be interpreted by considering statewide, district-wide, and/or curriculum-based standards for early literacy. Many states have or are currently implementing standards of learning (i.e., performance mandates) with respect to early literacy. Again referencing the practices of Virginia, the state legislature has included specific literacy benchmarks in their standards of learning that children must achieve across the grades. The following are several of Virginia’s standards of learning with respect to early literacy proficiency for kindergarten children.

- Identify and recognize rhyming words.
- Identify beginning consonants in single-syllable words.
- Identify both upper- and lowercase alphabet letters.
- Use letters and phonetically spelled words to write about experiences.

Learning standards of local school divisions, which are reflected in classroom and grade-level curricula, are often aligned with those of the state, given that failure of children in a particular school division to meet such standards can negatively impact funding and accreditation status.

Speech-language pathologists can promote children’s success in meeting state- and district-wide standards of learning in early and later grades by comparing children’s performance on early literacy screening tasks against such standards. That is, clinicians can use screening to identify those children who are unable to perform tasks that represent specific learning standards. Children on one’s caseload who are unable to perform tasks that are aligned with or mandated by state- or district-wide performance expectations may be considered priority candidates for early literacy intervention. In such cases, screening can identify those children who would benefit from additional instruction aimed at bringing their skills in alignment with such expectations.

Results from early literacy screening may also be interpreted by comparing performance to curriculum-based performance standards, that is, those skills or that knowledge that is emphasized within a particular child’s classroom or grade-level curriculum. As has been noted, early literacy expectations and the types of activities used to promote early literacy vary considerably across preschool and kindergarten classrooms as a function of the classroom’s curriculum. Children in classrooms employing particular basal reading programs participate in literally hundreds of explicit tasks emphasizing letter name knowledge, phonological awareness, and letter–sound correspondence. In other classrooms, for both theoretical and practical reasons, children have substantially less exposure to these sorts of tasks.

Knowledge of the early literacy curriculum used within a particular classroom can be attained through teacher interviews and careful observation of classroom activities. Subsequently, children’s performance on early literacy screening tasks can be interpreted against what is known about the classroom literacy curriculum. This can help to determine the extent to which a child is able to participate successfully in the early literacy curriculum and to identify particular areas in which enhancement of skills may be needed.

Using Local Norms for Interpretation

In combination with interpreting children’s performance against grade-level norms and curriculum-based standards,
local norms can also be developed to provide a particularly sensitive and responsive index of early literacy skills for children in a particular classroom, school, or district. This appears especially useful for those contexts in which children speak a dialect differing from Standard American English, or in which the ethnic and/or racial composition of students and families is diverse. For instance, clinicians working with Spanish-speaking children may need to devise specific tasks that are sensitive to the linguistic structure of Spanish and that reflect the literacy practices and beliefs of these children’s families. In such cases, local norms would be particularly helpful for interpreting screening results.

Local norms are collected by (a) identifying the population of interest (e.g., all kindergartners in a district), (b) administering tasks or tests to that population (preferably with the help of other professionals), (c) analyzing data to characterize performance (e.g., mean scores, standard deviations, range of responses), and (d) developing a performance standard in response to these data. For instance, local norms for home literacy experiences could be obtained by developing and then administering a questionnaire to all parents of kindergarten children residing in a school district. Items may focus on the frequency of parent–child shared book reading, availability of printed materials in the home, and parents’ own literacy activities (e.g., How often do they read the newspaper or visit the library?). Subsequently, responses to questionnaire items would be analyzed to develop a home literacy profile that is characteristic of these particular parents and their children.

There is no best way for interpreting early literacy screening performance. To this end, speech-language pathologists need to balance screening decisions, and particularly performance interpretations, against benchmarks ascribed by national goals, statewide standards, curricular initiatives, state and local norms, and, importantly, the unique characteristics of the children and families with whom they work. It is always important to frame interpretation within the greater context of the purpose of screening: to identify those children requiring more comprehensive literacy evaluation and increased literacy learning opportunities.

**HOW RESULTS FROM EARLY LITERACY SCREENING CAN GUIDE INTERVENTION**

Use of a comprehensive screening protocol, and one that is robust in its ability to identify children who are at risk, can provide the speech-language pathologist with important insights into those areas of early literacy that need to be targeted for a particular child (e.g., print awareness, phonological awareness, letter name knowledge). Specific early literacy targets for individual children can begin to be addressed immediately following screening. At the same time, advanced assessment activities should be organized by the speech-language pathologist and/or reading specialist (or whoever is responsible for such within the school or district) to develop a more comprehensive profile of early literacy strengths and needs.

Once a child’s early literacy targets have been identified, activities for promoting skills in these areas can be embedded within the direct therapy context and within children’s classrooms through collaboration and consultation with classroom teachers and other specialists (ASHA, 2001). Strategies that can promote early literacy performance in young children with communicative impairments include (but are not limited to): (a) playing picture matching games in which words are matched on the basis of rhyme or alliteration (Bear, Invernizzi, Templeton, & Johnston, 2000; Harbers, Paden, & Halle, 1999; van Kleeck, Gillam, & McFadden, 1998); (b) listening to stories that contain frequent pairs of rhyming words (van Kleeck et al., 1998; Yopp, 1992); (c) identifying letters and words occurring in story books (Ezell, Justice, & Parsons, 2000); and (d) generating words beginning with the same sound as a target word (van Kleeck et al., 1998). Involving parents as principal partners can also be an effective intervention strategy (Ezell et al., 2000; Justice & Ezell, 2000).

Broadening service delivery to include early literacy screening and, subsequently, instructional activities aimed at promoting early literacy achievement for at-risk children, provides a powerful tool for enhancing the effectiveness of speech-language pathology services. In other words, increasing the focus of service delivery to include systematic attention to early literacy—through prevention, identification, assessment, and intervention activities—can help promote children’s communicative achievements in a broader sense.

**PUTTING IT ALL TOGETHER: STEPS TO IMPLEMENTATION**

Successful design and implementation of the early literacy screening protocol may seem a daunting and challenging task; however, the rationale behind screening argues the need for taking on this challenge. The following suggestions may facilitate the effectiveness of efforts to get the screening protocol “off the ground”:

- Design the screening protocol through collaboration with other professionals, including general and special educators and reading specialists. This can be facilitated by forming a special committee whose charge is protocol design and implementation. Support of this charge by school/district administrators is critical and should be fostered from the start of this initiative.

- Prior to developing the specific components of the protocol, identify the population with whom the protocol will be used (e.g., Will the protocol be used only with children receiving speech/language services, or will it be used for all children in a particular classroom, grade, building, or district? Will it be used for preschoolers and/or kindergartners?). Describe the characteristics of this target population (e.g., Do these youngsters make up a relatively heterogeneous group [in terms of ethnicity, dialect, language, socioeconomic status], or is the group fairly homogeneous?).
In developing the protocol, first survey instruments that are currently available (in catalogs, if administrators have pledged financial resources to this project), with careful attention to what may already be available or in use within one’s own district. Examine these instruments in terms of the essential features of psychometric quality, comprehensiveness, and sensitivity. Determine the extent to which these instruments will make up a portion of the screening protocol, and, subsequently, determine where protocol gaps exist (e.g., Is the protocol adequately comprehensive? Where might it lack sensitivity?). Devise tasks to fill these gaps accordingly.

Conduct pilot testing with the protocol by screening several children who are representative of the target population. Evaluate findings in terms of perceived efficiency (e.g., Was the protocol easily and quickly administered? Were children responsive?) and revise the protocol accordingly.

Develop preliminary interpretative “benchmarks” (i.e., passing scores on screening) for the protocol by considering state, district, school, and curriculum-based literacy standards. This is a critical committee decision because these benchmarks will be used to differentiate children on the basis of literacy risk.

After the protocol has been developed and benchmarks have been established (recognizing that both are preliminary), conduct a “field study” to characterize the current protocol in terms of its effectiveness. (If the protocol is not revised subsequently, results of the field study can be used to devise local norms.) Evaluate the sensitivity of findings by determining the extent to which children who are viewed as being at risk by committee members or other school personnel were identified as such by the protocol. A local statistician or evaluation consultant can be called on to assist with analyses. Determine the protocol’s hit and miss rates. If these are unacceptable (particularly the hit rate), revise the protocol accordingly.

Determine how screening results will be used. For instance, the committee should identify who in the school is responsible for coordinating additional literacy assessment for children who fail screening. Likewise, procedures for integrating literacy targets across all relevant instructional contexts for identified at-risk children also need to be determined.

Report committee activities and findings to all relevant individuals on an ongoing basis. This includes school personnel (e.g., teachers, administrators, staff), parents, and other community members. Dissemination is a key strategy for ensuring that all relevant persons have opportunities for input and are aware of their roles and responsibilities in screening activities.

In sum, the roles and responsibilities of speech-language pathologists working with young children have recently been broadened to include a literacy focus (ASHA, 2001). The purpose for this broadened focus of service delivery is to minimize children’s likelihood for experiencing the academic and learning problems that are often associated with language impairment, particularly those involving literacy difficulties (Fey, Catts, & Larrivee, 1995). Implementation of an early literacy screening protocol offers significant promise as a proactive means for enhancing literacy-related service delivery activities. Speech-language pathologists are encouraged to develop and use a screening protocol that effectively and efficiently identifies those children requiring early prevention, assessment, and intervention efforts.

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Contact author: Laura Justice, Communication Disorders Program, University of Virginia, 2205 Fontaine Avenue, Suite 202, Charlottesville, VA 22903. E-mail: lmj2t@virginia.edu

APPENDIX. THE WRITTEN LANGUAGE AWARENESS CHECKLIST (JUSTICE & EZELL, 2001b)

Child’s Name: ___________________________ Date: ________________
Child’s Age: ____________ Birth Date: ____________ Examiner: ________________

Directions: Observe the child in an array of early literacy activities (for example, one-on-one shared story book reading, whole class writing and reading activities). Check each of the following that applies.

_____ Child recognizes that print runs from left to right.
_____ Child distinguishes scribbles (“writing”) from pictures in drawings.
_____ Child knows that words are comprised of letters.
_____ Child uses a print vocabulary, such as read, word, write, and letter.
_____ Child responds to signs in the classroom.
_____ Child recognizes common logos, such as store names or a sports team.
_____ Child shows interest in what items say in the classroom.
_____ Child differentiates between pictures and print on posters and signs.
_____ Child asks for help to “read” signs and words in environment.
_____ Child understands that print has a different role than pictures on signs.
_____ Child is interested in reading and sharing books.
_____ Child identified the front and back of a book.
_____ Child holds books the correct way (right side up, front side forward).
_____ Child can tell title of favorite books.
_____ Child turns pages of a book from front to back.
_____ Child knows that print tells the story.