National Institute for Literacy

Adult English Language Learners
with Limited Literacy

Martha Bigelow and Robin Lovrien Schwarz

September 2010

The National Institute for Literacy, a Federal government agency, is a catalyst for advancing a comprehensive literacy agenda. The Institute bridges policy, research and practice to prompt action and deepen public understanding of literacy as a national asset.

Daniel Miller, Acting Director

Lynn Reddy, Deputy Director

September 2010

The citation for this report should be: National Institute for Literacy, Adult English Language Learners with Limited Literacy, Washington, DC 20006.

Table of Contents

Executive Summary

Adult English language learners who lack print literacy or experience with formal education encounter a unique set of challenges in their lives and their efforts to learn English. Educators and policymakers are similarly challenged by how best to help these adults acquire English literacy. This paper reviews a variety of research, including that on language acquisition, literacy development in adults and children, cognition and brain functioning, adult education, and professional development. Though research on this specific group of adult learners is sparse, available findings suggest that they need programs and classes separate from those for other beginning-level English language learners, with particular attention paid to cultural influences and their experiences (or lack thereof) with formal education. Those who teach these adults can benefit from professional development opportunities that focus closely on the specific backgrounds, strengths and needs of these learners.

Introduction

Between 2004 and 2007, some 17 to 21 percent of the total population of English language learners (ELLs) enrolled in federally funded adult English as a second/other language (ESOL) programs were determined to be at the English as a second language (ESL) beginning literacy level by the National Reporting Service. (These figures, however, do not reflect the education or literacy levels of adult immigrants or refugees who do not enroll in federally funded adult ESOL classes.) At the beginning level, the individual has no or minimal reading or writing skills in any language. May be able to recognize and copy letters, numbers and a few words (e.g. own name). May have little or no comprehension of how print corresponds to spoken language. Individual may have difficulty using a writing instrument. Individual functions minimally or not at all in English and can communicate only through gestures or a few isolated words. Individual may recognize only common words, signs or symbols (e.g., name, stop sign, product logos). Individual can handle only very routine entry-level jobs that do not require oral or written communication in English. Individual may have no knowledge

or use of computers. (National Reporting System, n.d., Educational Functional Level Descriptors)

The focus of this paper is on learners with limited print literacy or low literacy, which are the terms used in this paper. The many adult ELLs who lack print literacy warrant the attention of policymakers, researchers and educators because their instructional and programmatic needs differ from those of learners who are print-literate (Burt, Peyton, & Schaetzel, 2008; Johnson & Terrill, 2006). This paper addresses the following questions to offer broad guidance for teachers, administrators and policymakers on meeting the needs of this population:

+ What are their language and literacy strengths and needs?

+ How do they differ from language learners with prior schooling and native language literacy?

+ What considerations are relevant for the programs in which they enroll?

+ What motivates them to learn English?

+ What do teachers need to know to be effective with them?

The paper includes an analysis of the characteristics of this population, noting that it is unique among other populations of ELLs, and reviews the published literature relevant to adult ELLs with very low print literacy. The instructional and programmatic implications of this research are discussed, as are the professional development needs of teachers working with these adults and areas in need of further research.

There is little research on adults who are learning English (referred to in this paper as *adult ELLs*) and also acquiring basic literacy for the first time. Most research on basic literacy focuses on children and on adults working in their native language, rather than on adults learning English as a second language. To ground this paper in the available scholarship, we consulted several resources[1] with a focus on adult ELLs with no prior formal schooling and limited or no print literacy. There are vast differences between adults who have no print literacy and those who have even a small amount of literacy. To encompass a greater number of topics (e.g., the role of print literacy in

phonemic awareness skills), we broadened the scope of the paper to include some studies of adults with limited literacy, which include studies of learners of languages other than English and of monolinguals not literate in their native language(s).

Who Are the Learners and Why Do They Lack Print Literacy?

Differences Among Adult ELLs
Who Lack Print Literacy

Some researchers and practitioners in the field of education for ELLs use the term *literacy students* for those who, for any reason, are in the emergent stages of becoming literate in English (e.g., Valenzuela, 1999. Burt, Peyton, and Adams (2003) noted distinctions among this diverse group of learners with the following categories, first outlined by Haverson and Haynes (1982):

Pre-literate. Learners from a culture and language without print literacy, or in which language is just beginning to be written and is not widely available, so they are not print-literate in any language (e.g., some Hmong refugees)

Nonliterate. Learners from a culture and language with print literacy but who have not yet become print-literate (e.g., some Haitian migrant workers)

Semi-literate. Learners who understand that print carries meaning but are unable to decode or encode print themselves (e.g., a person with interrupted formal schooling who may have begun to acquire print literacy but was not in school long enough to master basic skills). This group may include learners who were in the other categories at an earlier time.

This paper focuses on these three groups: preliterate, nonliterate and semiliterate learners. Although some ELLs have no apparent literacy skills because of cognitive or learning impairments, this subset of learners is not addressed here because of the complex issues involved in identifying such disabilities across languages and cultures (Lovrien Schwarz, 2009).

Reasons for lack of print literacy

The reasons learners lack print literacy can vary widely. They include political circumstances, poverty and cultural expectations. Such political circumstances as civil war, genocide and famine cause the closing of schools, internal

displacement, forced migration and, thus, limited and interrupted formal schooling. In refugee camps, education is often impossible or continually interrupted. In Dadaab Refugee Camp in Kenya, for example, young people accounted for 49 percent of the refugee population but had limited opportunities for vocational training, skill enhancement, postsecondary education or employment (Rackley, 2006). Further, refugees must often withstand long processing delays in poor conditions before being resettled to a third country where they may begin their schooling. It took several decades, for example, to resettle thousands of Hmong refugees from the Wat Tham Krabok in Thailand. Such delays mean that many school-age children and youth will have interrupted schooling or no schooling at all by the time they reach the United States. When they are finally resettled, they may be past the age for attending K–12 schools and must enroll in adult programs. For example, many of the Sudanese "Lost Boys" were over age 18 when they were resettled in this country.

Poverty is one of the major causes of limited literacy (Batalova, Mittelstadt, Mather, & Lee, 2008). Poverty keeps children out of school when families cannot afford books or clothing or need their children to work or help the family during their school-age years. Gender may influence opportunities for formal schooling and literacy development. In some places, schooling for girls is not a family or societal priority, or girls may risk becoming victims of violence if sent to school (Abdi, 2007).

Adult ELLs who are not print-literate may come from a marginalized group in their native country and have been deprived of educational opportunities because of ethnic oppression (e.g., the Karen of Burma, who have long fought the Burmese government and have been forced into refugee camps). Finally, natural disasters can disrupt communities, keeping schools closed and forcing people to move, thereby interrupting educational opportunities for many years (Schwarz, 2005).

Lack Of Literacy Among Immigrants
in the United States

Arrival in the United States does not guarantee immediate access to literacy. Some adults lacking print literacy encounter obstacles to literacy within the United States.

In her ethnographic case study, Menard-Warwick (2005) found explanations for the low literacy attainment of Central American immigrant women in a family literacy program. Immigration laws, welfare and the economic downturn of 2001 all played some role in participants' inability to persist in their literacy classes. Parents' views of education and participants' educational opportunities in their home countries also helped shape their attitudes toward learning. Further, once in the United States, some adolescent or adult ELLs may need to earn a living, which can leave no time for education (Schwarz, 2005). Some adults lack confidence in their ability to learn (Auerbach, 1996; Cook & Quiñones, 1983; Schwarz, 2005).

Cultural influences may hinder adults' involvement in education. In some immigrant communities, elders may be hesitant to undertake English language and literacy instruction because doing so may jeopardize their standing in their family or cultural community. For example, the religious beliefs of the Kurdish Yezidis, according to Sarroub (2008), advocate avoiding print literacy. Similarly, Levinson (2007) described resistance to literacy among English Gypsies. Saki, a participant in Levinson's study, lamented, "Education has divorced me from my community" (p. 30). Saki reported that his older brother said that he had betrayed all that his family stood for by becoming educated. Other participants said that if they wished to attend adult literacy classes, these classes must be outside their community, so that even their closest relatives would not know they were attending class.

The inaccessibility of ESOL classes in the United States plays a role in learners' failure to acquire literacy, as evident in the waiting lists described in some programs (Santos, 2009). Further, despite the fact that classes are often free, work schedules, child care costs and travel expenses often prevent adults from attending class. Other limiting factors include the proximity of classes to neighborhoods where recent arrivals live. In difficult financial times, programs struggle to offer classes specifically tailored to the needs of learners lacking literacy.

Literacy is often portrayed as a characteristic of individuals (e.g., Bialystok, 2001) and seen as something for which adults who cannot read or write are responsible. In other words, it is often assumed that everyone can become literate, and when people fail to do so, it is because they are unwilling to avail themselves of educational opportunities. Sociocultural views of literacy would counter this view of literacy as residing only within an individual, considering it instead as a phenomenon that can be co-constructed among individuals (see, for example, Reder, 1994). The circumstances described above, however, illustrate the many political, historical and societal reasons that can prevent adults from acquiring print literacy. This research shows how understanding literacy in its social context can contribute to a more complete understanding of literacy across cultures and contexts (Reder & Davila, 2005). It also shows that adult ELLs without print literacy are diverse and that reasons for lacking print literacy vary widely among individuals.

Strengths and Challenges that Adults with Limited Literacy Bring to Adult Education Programs

Adult ELLs bring several strengths to education programs, including knowledge and life experience. As noted by August and Shanahan (2006b), "when it comes to literacy development, English-language learners are best conceptualized as having a reservoir of knowledge, skills and abilities that serve second-language learning and use" (p. 172). For instance, many adult ELLs lacking print literacy or formal schooling are likely to have mastered various oral language genres in the language(s) they speak (e.g., by shopping, praying, socializing). They already have experience acquiring knowledge in one or more languages (e.g., how to raise children, cook, navigate bureaucracies, drive, find new jobs in the United States).

Research has been done on the strengths of immigrant families, many with limited formal schooling. Some of these studies are called "funds of knowledge" research (e.g., González, Moll, & Amanti, 2005), which seeks to uncover the knowledge and skills immigrant families possess, rather than focusing on what they lack. For example, Olmedo (1997) described a Puerto Rican family's funds of knowledge across generations with few formal schooling opportunities. This family had many skills (e.g., sewing, cabinetry, cooking) that they used to support their relatives in Puerto Rico and later in New York City. Through this work, Olmedo sought "to create a new conceptualization of multicultural education, thus challenging deficit

theories that lower expectations and limit possibilities for children of minority groups" (pp. 570–571).

Espinosa-Herold (2007) described how the cultural "dichos," or sayings used by a Mexican immigrant mother with little formal schooling, supported her adolescent daughter in achieving her educational goals. Bigelow (2007) found that a Somali mother with limited formal schooling, little English language proficiency and low native language literacy was able to do many things to help her children succeed in U.S. public schools. An ethnographic study of adult Latinos with low print literacy in Canada noted that participants were comfortable navigating life situations in the English they developed for those purposes (Klassen, 1991; Klassen & Burnaby, 1993). They were capable and competent outside of their ESOL class and felt diminished and uncomfortable only in class, where their language was deemed deficient.

This research lends further evidence to points made by scholars about some of the misconceptions about adults with limited formal schooling as incapable or ignorant (Grant, 1997; Street, 1997). Nevertheless, the lack of print literacy among immigrant adults often is a barrier to obtaining important information, and the many disadvantages of not being print-literate in U.S. society cannot be underestimated.

The experience of living without literacy in the United States is captured in the adapted story of a young Somali woman:

> Ilhan Mohamed is 19 and illiterate. Although she speaks rapid-fire English, her lack of literacy has been an obstacle to finding a job to support herself and her young son. Illiteracy permeates Ilhan's life. She memorizes phone numbers, sometimes writing them down, but is unable to remember whose number is whose. She cannot fill out a job application on her own, or decipher a medicine label. She is suspicious of signing anything for fear someone will take her son. Ilhan is embarrassed by everything she cannot do. Still, she has big goals for her life—getting her GED and starting a center for abused Somali women. Ilhan has asserted that if she concentrated, she could learn to read and write in a month,

maybe two. But when Ilhan enrolls in adult ESL classes, she is placed with other adults who have had formal schooling and can read and write in their native language. They don't speak English as well as she does, but they have a much easier time with the tasks the teacher asks them to do. (K. Miller, 2009)

Ilhan's story illustrates the urgent need to acquire basic literacy skills to reach immediate and long-term goals. Her story also portrays some of the strengths of adult learners—strong oral language skills and clear goals—and their common challenges. Finally, it suggests the instructional and curricular challenges of learners with dramatically different needs studying in the same class. The next section offers an overview of some of the research on developing the literacy skills students like Ilhan need.

Research on Literacy Development Among Children and Youth Syntheses of Research on Reading Development

Much of the research on literacy development in the United States has focused on reading, albeit mainly with children and youth, not adults. However, this research must not be discounted. For example, Curtis and Kruidenier (2005) and Kruidenier (2002) offer a comprehensive and useful review of research on adults learning to read in their home language. Research carried out with children is also helpful. A recent review of this work appears in the Report of the National Literacy Panel on Language-Minority Children and Youth, "Developing Literacy in Second-Language Learners" (August & Shanahan, 2006a). In this same report, Catherine Snow includes the broad conclusion that ELLs are more likely to perform similarly to native speakers of English in the areas of word recognition and spelling, rather than on measures of reading vocabulary, comprehension and writing (p. 633).

According to three experimental studies with elementary school learners, young ELLs have strengths in word reading. Not known, however, is how fluently they read or how they perform when asked to read new, multisyllabic or technical vocabulary in higher grades.

The few studies included in the review on the topic of reading comprehension were done with elementary and middle school ELLs and show that their reading

comprehension performance falls well below that of their native-speaking peers (Snow, 2006, p. 633).

These findings have nominal meaning for adult ELLs without print literacy because the children in these studies were likely to have more literacy skills than the adult ELLs addressed in this paper, who have not yet learned to decode or encode any print. The report does make the point that, if reading is not informed by the assumption that text has meaning, as with those who already know how to read, then the process of learning to read in a second language is sure to be different and slower.

Snow (2006) distinguished between "learning to read *in* a second language and learning to read a second language" (p. 646), an idea applicable to adult ELLs without print literacy. For example, in a longitudinal study in Tasmania, recognition by the non-print-literate adults that text could have relevance in their everyday lives was one of the major outcomes of the study. This project employed a curriculum and materials developed explicitly for nonliterate African immigrant students in Tasmania. Surveys of the learners at the end of the initial project indicated that even those with no prior exposure to formal learning or books finally understood how text could be relevant to them (Williams & Chapman, 2008).

First and second language oral proficiency, in addition to first language literacy skills, influences the development of literacy skills. August and Shanahan's (2006b) report discussed the role of native language in relation to the debates about what does and does not transfer from the first language (L1) to English language speech and literacy. Research on foreign-language learning difficulties and factors predicting these difficulties shows a strong relationship between L1 oral skills and later levels of oral and literacy proficiency in a second language (L2) among children. This finding holds true for adult L2 learners as well (Sparks, Patton, Ganschow, Humbach, & Javorsky, 2006). One study of young Spanish-speaking ELLs investigating the notion that phonological skills transfer from L1 to L2 found that, although statistical trends in groups indicate that transfer happens readily, actual transfer is highly subject to individual L1 oral proficiency (Atwill, Blanchard, Gorin, & Burstein, 2007), with less-proficient Spanish speakers transferring little phonological awareness to English.

A further complication is that some ELLs are assumed to be native speakers of an official language of their nation of origin, but in fact they may speak a minority language instead (Juffs & Rodriguez, 2008; Wiley, 1993). Furthermore, phonological skill transfer is affected by the phonological similarities and differences between the learner's L1 and English. For example, awareness of word onsets (part of the syllable that precedes the vowel) and rimes (part of a syllable that consists of a vowel and the consonant sounds after it) is critical for later reading in English, but not for Spanish (Jimenez & Venegas, 2004). In another example, Hmong is a monosyllabic language, unlike English, so a Hmong speaker may have difficulty understanding where word boundaries are in English.

At the level of literacy transfer, August (2006) found a clear distinction between transfer processes in learners with high L1 literacy and those with much lower L1 literacy. She found that learners with higher levels of literacy could use higher-level thinking and reading techniques to read and understand English, but those with low literacy (below fourth grade) did not have the advantage of transferring those skills. She noted that this means that higher level reading skills must be developed in L2, which in turn means a longer process of learning to read the new language for those with little L1 literacy. Ijalba (2008) found that Spanish-speaking adult ELLs with very low literacy skills (and, therefore, low phonological skills in Spanish) had significantly more difficulty learning to read and write in English than did more literate peers.

Robson (1983), whose studies of Hmong learners of English in a refugee camp in Thailand appear to be among the earliest studies of English learners who either were completely nonliterate or had acquired some literacy informally, found that literacy itself influenced the acquisition of further literacy. Her findings indicated that literacy in any script supported literacy acquisition and success in English classes more than did formal schooling. In fact, learners with no literacy at all derived little, if any, benefit from the classes.

The positive effects of language and literacy transfer are leveraged in instructional approaches that include use and development of learners' native languages, such as bilingual education programs for children. August and Shanahan (2006b) reported that instructional programs that include

developing learners' native language(s) are beneficial for second language literacy development and that bilingual programs tend to help non-native English speakers perform better on measures of English reading proficiency at the elementary and secondary school levels. Robson's (1983) study of Hmong showed that those who had informally acquired some literacy in Hmong had more success acquiring English literacy than did their nonliterate peers. Burtoff's (1985) study of Haitians compared those learning Creole and English literacy with those learning only English literacy. The group learning both Creole and English literacy had a statistically significant advantage over those learning only English literacy. Although these small studies illustrate the influence of native language literacy for adults with limited English literacy, more evidence is needed.

Cognitive Factors Influencing Literacy and Learning
The defining characteristic of the adults who are the focus of this paper is that they do not have print literacy skills. What effect does this have on their learning of another language, literacy skills or content information; on learning to learn; or on learning in a classroom? The debate over these questions has raged for decades. Shank, in a review of the literature more than 20 years ago, discussed two views in the then-current psychology about the effects of literacy. The first view, popular among many psychologists in the 1960s and 1970s, maintains that literacy causes "the emergence of general mental capacities—abstract thinking…or logical operations—rather than specific skills" (Scribner & Cole, as cited in Shank, 1986, p. 9). Huntley (1992), in her discussion of different perspectives on teaching literacy to nonliterate adults, cited several other researchers who support the view that "literacy promotes higher orders of cognitive development that are significantly different than the oral modes" (p. 24). She noted that so strong was the belief that literacy transforms minds and thought, that in 1965, UNESCO "urged the acceleration of world-wide literacy programs to overcome the deep psychological differences between oral and literate thought" (Huntley, 1992, p. 24).

The other point of view on cognitive development and literacy, which Scribner and Cole supported with their studies of the Vai people of Liberia, is that higher-level cognitive thinking skills are not, in themselves, dependent solely on literacy. Scribner and Cole found that literate and nonliterate Vai performed similarly on the cognitive tasks presented, but they did acknowledge that more years of formal schooling provided a definite advantage over no formal schooling in speed and overall understanding in performing these tasks (as cited in Shank, 1986, p. 9).

Literacy and schooling appear to foster greater literacy and other learning. Over many decades, scholars discussing the teaching of English and literacy to nonliterate adult ELLs have acknowledged that nonliterate persons appear to acquire literacy skills in English classes much more slowly than do those with even some small degree of literacy (Burt, Peyton, & Adams, 2003; Burt et al., 2008; Dellicarpini & Engleman, 2006; Gaul, 1982; Haverson & Haynes, 1982; Huntley, 1992; Ingersoll, 2001; Juffs & Rodriguez, 2008; Lado, 1991; Reimer, 2008; Shank, 1986; Whiteside, 2008; Williams & Chapman, 2008). Though several of these scholars suggested other reasons for slow learning among the nonliterate, such as age, unsuitability of instruction to learner goals, ineffective teaching methods or lack of oral English proficiency, none provided a cause for this difference. For some scientific evidence, we turn to researchers who study the brain and learning.

Effects of Literacy on Language Processing
In the decades since Scribner and Cole did their work, a good deal of inquiry has focused on the effects of literacy on the brain and the learner. Because the intent of most of the studies has been to understand how the nonliterate brain differs from the literate brain on tasks typically used in educational and psychological testing, these studies usually examine persons with no prior print literacy and involve comparisons to low-literate and high-literate controls, irrespective of whether they are language learners or attempting to become literate in English or another language. Researchers working with illiterate adults in their native languages emphasize that those they term *illiterate* lack print literacy because of social reasons, not because of learning disabilities or other neurological problems that would interfere with normal learning (e.g., Adrian, Alegria, & Morais, 1995; Morais & Kolinsky, 2002).

These studies with adults in their native languages have been conducted in a variety of countries and with participants of many language backgrounds and a wide range of ages (from teens to those in their 80s). Some studies are large, with several hundred subjects, whereas others may have up to a hundred subjects. The overall finding of these studies is that literacy and formal schooling have a profound effect on how individuals process oral language and carry out a range of neuropsychological tasks.

One of the first and biggest differences observed between non-print-literate subjects and their literate peers was in language processing and language-based tasks. Morais, Cary, Alegria, and Bertelson's (1979) study was apparently the first to show that "certain aspects of the ability to deal with phonetic units of speech are not acquired spontaneously, but are the result of learning to read" (Castro-Caldas, Petersson, Reis, Stone-Elander, & Ingvar, 1998, p. 1053). That is, non-print-literate subjects have a significantly harder time than do literate subjects in recognizing words as "phonological entities" (Kolinsky, Morais & Cary, 1987) or manipulating words through changing phonemes—such as deleting a phoneme to create a new word or generating words according to first sound. Castro-Caldas and Reis (1997) extended this finding to confirm that non-print-literate adults could not repeat pseudo-words (e.g., *skridge*) as accurately as literate controls could. The ability to manipulate phonemes (e.g., What is *sol* backwards?) is usually understood as indicating a high level of phonological awareness in those who are literate in an alphabetic language (Wagner, Francis, & Morris, 2005), while repetition of pseudo-words is used as a measure of short-term phonological memory, considered key to the acquisition of L2 oral/aural skills and vocabulary (e.g., Dufva & Voeten, 1999; Ellis, 1996). Therefore, finding that nonliterate individuals performed significantly less well on these tests than those who were literate caused researchers to wonder just what literacy does to the brain that improves performance on these phonological tasks.

More precise information about how literacy changes the way the brain functions has emerged thanks to technology that permits observation of the brain during processing of phonological tasks. The effects of literacy on the brain are profound. Castro-Caldas and Reis (2003) believe that learning to read causes fundamental changes in the organization and functioning of the brain. In non-print-literate adults, fewer and different areas of the brain are activated during oral language tasks involving phonological information (e.g., manipulating syllables or sounds) or unreal words (e.g., *frip*) than in the brains of literate subjects. However, the brains of both groups functioned in the same way during the oral repetition of real words. These findings were understood as showing that knowledge of orthography, or written language, interacts with oral language, modulating oral language in significant ways (Petersson, Reis, Askelöf, Castro-Caldas, & Ingvar, 2000). Learning to read causes the brain to acquire different strategies for information processing; literate subjects use both hemispheres of the brain for processing language-related tasks, while nonliterate subjects use largely the left hemisphere (Castro-Caldas & Reis, 2003; Ostrosky-Solís, García, & Pérez, 2004; Petersson, Silva, Castro-Caldas, Ingvar, & Reis, 2007). Thus, Petersson et al. (2007) argued that literacy influences how the two hemispheres of the brain interact, specifically with respect to the balance between the reading and verbal working-memory-related regions.

Besides their trouble with phonological components of words (e.g., affixes), nonliterate subjects also found the phonological length of words (e.g., number of phonemes in syllables) to be a difficult judgment in brain imaging studies. These subjects process language in ways similar to literate subjects if semantic, conceptual or pragmatic information is available, but they cannot do so using solely phonological information (Kurvers, van Hout, & Vallen, 2007; Reis et al., 2007). Furthermore, according to Castro-Caldas and Reis (2003), "knowledge of orthography [a writing system] introduces in the brain new strategies for information processing that manifest themselves in task performance" (p. 81). Significant differences between nonliterate and literate subjects in the strategies used to process many kinds of language-based tasks (e.g., repetition of digits, category-naming fluency, following oral directions) have been observed in a wide variety of other studies in many countries (e.g., Brucki & Rocha, 2004; Kosmidis, Tsapkini, Folia, Vlahou, & Kiosseoglou, 2004; Li et al., 2006; Manly et al., 1999; Ostrosky-Solís, Ardila, Rosselli, Lopez-Arango, & Uriel-Mendoza, 1998; Rosselli, Ardila, & Rosas, 1990).

Effects of Literacy on Other Cognitive Skills

Other domains besides language-related skills are affected by lack of literacy (Petersson et al., 2000). One significant area for educators is visual skills: visual processing, visual perception, visual-motor and visual-spatial skills. Evidence from brain studies shows that literacy affects the hemispheric balance for visual as well as language tasks. For example, many studies have found that non-print-literate subjects can name three-dimensional objects much faster than they can name two-dimensional objects (i.e., pictures and drawings; Brucki & Rocha, 2004; Manly et al., 1999; Mansur, Radanovic, Araújo, Taquemori, & Greco, 2006; Mathuranath et al., 2003; Reis, Guerreiro, & Castro-Caldas, 1994; Reis, Petersson, Castro-Caldas, & Ingvar, 2001; Rosselli et al., 1990; van der Elst, van Boxtel, van Breukelen, & Jolles, 2006). Indeed, Reis et al. (2001) proposed that "the interactions within and between the visual and language processing networks differ in literate and illiterate subjects" (p. 171), and Reis et al. (1994) observed that "there is a clear influence of educational level on the ability to name photographs and line drawings of the objects" (p. 939). Speed of naming in nonliterates was most enhanced by color, and then by degree of realism, in black-and-white photos (Reis, Faísca, Ingvar, & Petersson, 2006), indicating a hierarchy of difficulty for nonliterate persons in processing two-dimensional information. Apparently, the more lifelike the images, the easier they are to understand or interpret for adults without literacy and formal schooling.

Bramão et al. (2007) found that visual-spatial skills differed markedly between nonliterate and literate subjects. Subjects literate in an alphabetic language responded significantly faster to images appearing on the left side of a screen than did nonliterate subjects, who showed no preference for any area of the visual field. This finding indicates that nonliterate adults do not systematically scan visual fields as literate subjects do. Observing non- and low-literate adult Zulus looking at symbols being tested for use on medicine bottles, Nurss (1998) found that participants ignored the focal point of the image and visually scanned the entire picture, relating most strongly to things with which they had personal experience.

Other studies involving non-print-literate subjects provide considerable evidence that nonliterate subjects have significantly more difficulty than literate ones with a variety of visual-motor tasks, such as copying figures, creating stick figures from a picture model, and doing cancellation tasks (finding and crossing out a specified letter in rows of print; Ardila, Rosselli, & Rosas, 1989; Matute, Zarabozo, Robles, & Cedillo, 2000; Ostrosky-Solis et al., 1998; Ostrosky-Solís, Ramirez, & Ardila, 2004; Rosselli, Ardila, & Rosas, 1990).

A study by Castro-Caldas (2004) provides further insight into the long-term effects of nonliteracy on the brain, especially in the processing of visual images. A range of brain imaging technology has shown a variety of differences between nonliterate and literate brains, including physical differences due to differential use of certain brain areas. The occipital lobe, where visual images are processed, was observed to process information more slowly in persons who became alphabetically print-literate as adults than in those who learned to read as children.

In sum, these studies carried out with adults who are not language learners offer an important and informative research base with potential and testable implications for the study of L2 learners. Among monolinguals, literacy changes the way oral language is processed and visual images are understood.

Research on Adult Language Learning
Culture and literacy acquisition

This research with monolingual speakers shows how literacy affects cognitive activity across a range of oral and visual tasks associated with school-based behaviors. Literacy and formal schooling, however, are also social activities interwoven with culture (Bernhardt, 1991). Culture plays an important role in the acquisition of reading and other literacy skills. Culture may determine the value of literacy, who is allowed to become literate, or how literacy is used in a given society. Ostrosky-Solis, Castro-Caldas, and colleagues regarded education as a "subculture that facilitates the development of certain skills" (Ostrosky-Solis, Ramirez & Ardila, 2004, p. 188). These researchers have observed that, in a variety of literate and nonliterate indigenous and nonindigenous subjects in Mexico, the understanding of visual images and visual-spatial tasks depended not just on education but also on what is "important for survival" (p. 188), or on how well skills

already acquired supported the performance of school-type tasks. Greenfield (1997) observed that, in general, the unschooled participants in her qualitative study did not readily substitute pictures for real objects, although some interpretations of pictures were easier for them than others. Greenfield ascribed the differences to the extent to which her subjects had been exposed to certain pictures and which objects were prominent in their culture. Nurss (1998) also noticed that symbols on the medicine labels were not so hard to interpret, but the Zulu tended to relate immediately to aspects of the pictures with which they could readily identify, although these perhaps were not central to the intended meaning of the picture.

One view of this phenomenon is that picture recognition is one of many skills that are not innate and that are acquired in school (Ardila et al., 1989). One of the few experimental studies in the literature observed the positive effects of instruction on the performance of non-print-literate participants with no formal schooling on several neuropsychological tasks (Ardila, Ostrosky-Solis, & Mendoza, 2000). The authors advised other researchers that if they want nonliterate participants to perform better on certain tasks, they should be taught how to do the tasks, which is what Hvitfeldt (1985) observed of the learners in her study. They could be taught to interpret "iconic drawings" and then could learn from them. Thus, those who have been to school have an advantage over the unschooled on the types of tasks typically learned in school, as Scribner and Cole (1978) observed among the Vai and others have documented (Ardila & Moreno, 2001; Brito-Marques & Cabral-Filho, 2005).

Besides learning specific processing skills, a literate person learns to process information in ways qualitatively different from those of a nonliterate person. Formal schooling provides particular skills, possibly used primarily in formal school settings, and the combination of thinking and performance skills is a reciprocal relationship that permits learning in a formal classroom setting. Gombert (1994) reasoned that the more education one has, the easier it is to learn all aspects of a new language. The less education one has, the more difficult it is to profit from formal education, where organization and thinking skills and school-based skills are needed to succeed. The irony is that researchers acknowledge that nonliterate

adults can learn a second or additional language in informal ways (Huntley, 1992; Juffs, 2006; Kurvers & van de Craats, 2007; Robson, 1983). In other words, many adults without any schooling have learned new languages entirely through out-of-school oral interactions, and these skills are not necessarily maximized in classroom settings.

Second Language Learning and Processing Studies

This section focuses on research conducted with learners of a second language (L2 learners) who lack print literacy or formal schooling. Such adults can become literate in a new language (Young-Scholten & Strom, 2006), but their learning process may be different from that of adults with formal schooling. The first language-learning study we are aware of that included adult learners with little formal schooling was the Zweitspracherwerb Italienisher und Spanischer Arbeiter project (Clahsen, Meisel, & Pienemann, 1983). Participants were 45 native Italian or Spanish speakers learning German. One of the main findings from this project was that learners of German go through fixed acquisitional stages in terms of grammar, but researchers added the caveat that "there is sufficient room for the individual to find his or her own [language acquisition] path" (Pienemann, Johnston, & Brindley, 1988, p. 222) in the process. The group with more schooling preferred a "standard" orientation, which made accuracy the priority, while the other group had a "simplifying" orientation, favoring communicative effectiveness. Another longitudinal study, funded by the European Science Foundation, collected data from 40 participants learning a variety of minority languages from five different countries over 10 years. The researchers reported that participants with low levels of education seemed to make slower progress in their classes than those with higher levels of education and literacy (Klein & Perdue, 1997; Perdue, 1993).

Some of the most recent international research on adult language learners with limited or no formal schooling and low print literacy has emerged in a series of conferences specifically addressing this population. Symposia on Low-Educated Second Language and Literacy Acquisition (LESLLA) have been held in the Netherlands, the United States, the United Kingdom and Belgium. Thus far, the conferences have produced three peer-reviewed collections

of articles (Faux, 2007; van de Craats, Kurvers, & Young-Scholten, 2006a). The research reported in these volumes mainly used experimental or quasi-experimental methods to explore questions in second language acquisition that contribute to existing lines of research by including participants with limited formal schooling. Some of the most important findings with respect to literacy and language processing from these conferences and other publications are summarized in this section.

In the areas of phonemic awareness and cognitive processing, researchers have just begun to replicate some of the studies carried out with monolingual adults among populations of adult language learners. For example, Kurvers and van de Craats (2007) observed that participants of "average literacy" performed significantly better than did those with little or no literacy on a digit span task (repeating a series of numbers backward or forward) and a pseudo-word repetition task (repeating words from two to six syllables). Another oral task, marking word boundaries (recognizing individual words in the speech stream), is particularly problematic for adult language learners without print literacy, a finding consistent with studies cited previously of monolingual adults without print literacy (Kurvers et al., 2007). In another study by Kurvers (2007), beginning word recognition skills in a new language were qualitatively different for non-native speakers than for native speakers of the language. Language learners with emerging print literacy start their learning process with a nonsystematic visual strategy, in which they seek correspondences between visual or context clues and meaning, gradually learning to use the strategy of sequential decoding. This finding corresponds to several studies cited previously showing that learning to read itself supports the organizational skills needed for learning—that adults without print literacy are less systematic in scanning the visual field than are those with print literacy (Bramão et al., 2007; Dowse & Ehlers, 2003).

A series of studies with Somali adolescents and young adults with low print literacy (Bigelow, delMas, Hansen, & Tarone, 2006; Tarone, Bigelow, & Hansen, 2009; Tarone & Bigelow, 2007) found that literacy level played a role in how participants carried out oral tasks designed to elicit question forms in English. Participants with higher levels of literacy perceived recasts (target-like

reformulations of errors; e.g., "Why he is mad?" -> Why is he mad?) and repeated these recasts better than did participants with lower levels of literacy. Abukar, a focal participant, accurately imitated stress patterns and attended better to vocabulary items than to syntactic items (*cf*., Dowse & Ehlers, 2003). Abukar required multiple corrections to questions such as "Why he is mad?" or "What he try to write down?", apparently unable to invert "he is" or add the auxiliary "is" to these sentences. This difficulty is reminiscent of the syllable and word inversion tasks in studies such as Adrian et al. (1995) done with non-print-literate monolinguals. Abukar preferred processing strategies that relied much more on semantics (meaning) than on syntax, a finding that mirrors the studies done with non-print-literate monolinguals (Dellatolas et al., 2003; Reis & Castro-Caldas, 1997; Reis et al., 2003). Finally, Tarone, Swierzbin, and Bigelow (2006) found that participants with limited literacy produced narratives that contained more bare verbs (verbs without the correct endings, such as –ed or –s) and unmarked nouns (nouns not marked for plural) and fewer dependent clauses than did more literate learners.

While there are important theoretical implications for these findings, this research must be replicated and extended. Much is yet to be learned about how adult ELLs with limited formal schooling and without print literacy differ across native languages from children and from adults becoming literate in their native language. The differences between literate and nonliterate adult ELLs suggest the importance of different materials, pedagogies and programs, which will be explored later in this paper.

Metalinguistic Knowledge and Language Awareness
Most adult ELLs without print literacy have never been to school. As noted in previous sections, certain types of learning activities, ways of interacting and ways of talking about language common in school settings may be unfamiliar to these adults. Adults without print literacy are not likely to talk about language and literacy using such metalinguistic terminology as *sentence*, *noun*, *verb*, or *preposition* (Gombert, 1994). Metalinguistic awareness is a trained skill requiring knowledge of specific terms and ways of talking and thinking about language. Few studies have explored the role of metalinguistic, or even language,

awareness among adults who are not print-literate. Most studies focusing on language awareness are carried out in immersion or university settings with language learners who are literate and have more educationally homogeneous backgrounds than do most adults ELLs who are not print-literate (Lindberg, 2003).

In Gombert's (1994) study, adult learners with no print literacy appeared to profit from explicit instruction in metalinguistic language and concepts (e.g., parts of speech, linguistic register) because it gave them an additional tool for talking about language and promoted metalinguistic awareness. Learners equipped with this knowledge acquired literacy more easily than did those without it. Gombert noted that this study was undertaken because it had been observed that adult learners without print literacy did not develop these skills effectively through intuitive thinking about language.

Second language acquisition literature often speaks directly to how learners employ, or should employ, language-learning techniques at various levels of awareness across modalities and through a range of tasks (Doughty & Williams, 1998. In the study by Kurvers, Vallen, and van Hout (2006), adult learners of Dutch who had no print literacy had significantly more difficulty with language awareness tasks and talked about language in ways qualitatively different from comparison groups of literate children and adults. Shank (1986) reviewed research about the acquisition of formal operational thought (Piaget's conception of the ability to think about and manipulate abstract ideas) and how that fits what is known about nonliterate adult ELLs. She asked whether children and nonliterate adults differ in their ability to develop that level of thinking. She argued that second language acquisition theory has long maintained that effective adult language acquisition requires the ability to think about how language works. One indication of successful adult language acquisition is adults' ability to reason about and reflect on differences between their L1 and L2 and on metalinguistic features such as word order or how verb tenses are marked (Shank, 1986). The implication is that if adult ELLs without print literacy cannot leverage metalinguistic tools to learn a second language, the advantage they have over children may be diminished.

Phonological awareness may intersect with metalinguistic awareness in some ways as well. The important phonological awareness skill of identifying individual words in sentences, which in turn supports the development of concepts such as *word* and *sentence*, requires that learners perceive where words begin and end in sentences (i.e., recognize word boundaries). This task can be difficult because adults do not recognize phonemes in a new language as accurately as younger learners do (Kuhl, 2004). Awareness of word length can be influenced by the phonological structure of the first (or other) language(s) (Royer, Abadzi, & Kinda, 2004).

There is some evidence that even a low level of literacy can greatly improve a learner's ability to develop language awareness. In a study focusing on developing language awareness among adults of varying educational backgrounds, even the lowest levels of formal schooling facilitated language learning for most (Lindberg, 2003), as they did in Gombert's study. One participant, a woman from Morocco with no more than two years of formal schooling, convinced her peers to use the passive voice in their joint task, without using any metalinguistic terms. Their task was to re-create a text together that they heard only orally and had the opportunity to write down partially. She used pen and paper to help her reflect on verb forms, showing that even a very limited level of literacy is helpful in analyzing a second language. This research, albeit still emerging, helps illuminate the role of literacy in engaging in formal classroom learning, which is often facilitated by metalinguistic knowledge and skills.

Teaching Adult ELLs Without Print Literacy Skills

The review of the research shows that adult ELLs lacking print literacy are both the same as and very different from the types of ELLs who typically enroll in ESOL classes. For instance, they are the same in that they benefit from instruction and curriculum that take account of their life experiences, goals, family and workplace needs (Skilton-Sylvester, 2002; Skilton-Sylvester & Carlo, 1998). Condelli and Wrigley (2006) called this "bringing in the outside" (p. 127). Within a relatively small body of literature produced over the past four decades about adult ELLs with no print literacy, there is one consistent observation: The

instructional needs of these learners are clearly different from those of learners with even basic literacy. In programs where adults with no print literacy were included in beginning ESL classes, they did poorly and dropped out in much larger numbers than did more literate students (Brod, 1995; Brown, 1996; Cook & Quinones, 1983; Gillespie, 1994; Ingersoll, 2001; Klassen & Burnaby, 1993; LaLyre, 1996). Though the literature is thin, a few ideas emerge that provide some guidance for instruction.

A Programmatic Vision for Nonliterate Learners

Programs and practitioners repeatedly have recognized the need for programs especially designed for non-print-literate adult ELLs (Ingersoll, 2001; Shank, 1986). According to Lado (1991),

General notions of the effectiveness of current ESL programs wrongly lead to notions of complacency about the success of ESL literacy. ESL classroom programs are mismatched to the needs of the lowest level illiterate immigrant. ESL literacy models are needed that reflect an understanding of the cross-cultural nature of an ESL literacy classroom and of the relationships between literate teachers and illiterate students (p. 1).

A vision would require that a program develop a philosophy about what it intends to impart to non-print-literate adult ELLs and, perhaps more important, what success with these learners looks like. Many programs, when faced with nonliterate learners, "[try] to be all things to all people, [resulting in] a smorgasbord of educational offerings that serves to absolve teachers from examining their own philosophies and keeps them from exploring the perspectives that students bring to class" (Wrigley, 1993, p. 463). This situation, noted Wrigley, can produce "mindless eclecticism or a 'whatever works' philosophy that engulfs learners in an endless variety of activities" (p. 463).

A vision of how to serve non-print-literate adults should be informed by a clearer picture of these learners' needs than current methods appear to provide (Dellicarpini & Engleman, 2006; Klassen & Burnaby, 1993; Williams & Chapman, 2008, so that literacy instruction is "nonautonomous," or connected to many other things in learners' lives rather than just their lack of print skills (Lado, 1991; Williams & Chapman, 2008). Solorzano (1994) commented that ESL testing rarely

evaluates bilingualism and biliteracy. When print literacy is overlooked at the time of placement (Dellicarpini & Engleman, 2006), the poor outcomes documented by Ingersoll (2001) often result. To offer an effective instructional program for non-print-literate adults, evaluation and intake procedures should provide a clear picture of any prior attempts at literacy, all languages known, language dominance (which language is used most often at home and in social situations), and learners' use of English (e.g., in church, at work, with children's teachers).

Cultural factors that may affect the learning and participation of adult ELLs in ESOL programs must also be considered (Gaul, 1982). Where learners were permitted—even encouraged—to learn in culturally familiar ways, their persistence and engagement were significantly better (Hardman, 1999; Hvitfeldt, 1985; Podeschi, 1990). A vision of how intake and then instruction for nonliterate adult ELLs will be provided for a particular group of learners and clear goals for instruction will facilitate incorporation of the other instructional recommendations. Having information about native language proficiency and cultural backgrounds at enrollment will help educators create positive educational experiences for this unique population.

Separate Classes for Nonliterate Adult ELLs

Providing separate instruction for non-print-literate adults is strongly supported in the literature. The reasons are described below.

Adult ELLs lack an orientation to text. Literate learners have an orientation to text that nonliterate learners still lack, and the nonliterate are embarrassed by this lack of knowledge (Carlo & Skilton-Sylvester, 1996; Haverson & Haynes, 1982; Klassen & Burnaby, 1993; Lado, 1991; Wiley, 1993). A homogeneous class allows students to develop an understanding of the meaning of text in a safe environment.

Adult ELLs may lack self-confidence. Non-print-literate adults often must be coaxed and nurtured out of beliefs that they cannot learn to read or that they are too old to learn (Gaul, 1982; Ingersoll, 200; Vinogradov, 2008), even if the learners are in their 20s or 30s (Green & Reder, 1986). Self-confidence must be reconstructed through early success in appropriate literacy tasks.

Becoming literate may change the status of adult ELLs. Literacy and education can alter adults' social status in an immigrant community. Losing face among peers who are literate and educated can deter some adults from attending mixed-level classes. On the other hand, children or literate learners do not lose face with increased literacy and education (Gillespie, 1994; Hardman, 1999; Shank, 1986). In homogeneous classes, where all students are becoming literate for the first time, adult learners do not risk losing their social status among more literate peers.

Different assessments must be used. Assessment of nonliterate learners must differ from that used for literate learners to record their level of skill and progress accurately. This is impossible if assessment tools are created with literate students in mind (e.g., text-heavy rubrics, too many iconic pictures, language tasks designed for literate students) (Gaul, 1982; Lado, 1991; MacSwan & Rolstad, 2006; Shank, 1986; Young-Scholten & Strom, 2006; Wiley, 1993).

Literacy and other basic skills can be introduced more slowly. Literacy skills can be introduced more slowly if classes are not mixed. Non-print-literate learners' confusion and intimidation by the amount of text typically used in "beginning" ESL classes is a primary reason for their failure to thrive in mixed classes (Gillespie, 1994; Klassen & Burnaby, 1993; Lado, 1991; Skilton-Sylvester & Carlo, 1998). Williams and Chapman (2008) suggested that one of the keys to success in their program was that learners could repeat activities and content many times. Haverson and Haynes (1982) argued that "all aspects of literacy training will be extremely difficult for most adult learners" (p. 2), so teachers and learners need to take the time and use the many techniques necessary for acquiring these skills, without feeling that other learners are being delayed. In fact, learners in the Tasmanian project learned very basic classroom procedures and tasks through a great deal of repetition, but once they began to learn a few, those were slowly generalized to new situations and tasks (Williams & Chapman, 2008).

Materials Should be Suited to Nonliterate Learners.
Commercial materials suitable for use with nonliterate learners are very limited, so heavy reliance on teacher-made materials is usually necessary (Gaul, 1982;

Haverson & Haynes, 1982; Huntley, 1992; Southwestern Cooperative Educational Lab, 1969). There are many reasons that commercial materials are unsuitable for this population, including the fact that pictures with "symbolic conventions may be unintelligible to preliterates or even non-literates" (Shank, 1986, p. 12) and that learners may be unable to relate to the content (Williams & Chapman, 2008). For Williams and Chapman's (2008) project, materials had to be fully developed to match the program's vision for its learners. Solorzano (1994) commented that "commercially published materials…usually include pre-ordained competencies and/or skills that are unrelated to the [ESL] learners' needs or goals" (p. 8).

The heavy reliance on "written text and print convention" (Shank, 1986, p. 12) in commercial materials often poses challenges, because nonliterate learners cannot use print conventions and orthographic cues as literate learners can, nor can they use semantic or syntactic cues to make sense of what they are trying to read. Therefore, syntax and vocabulary must be very familiar to low-literate L2 readers. Also, learners acquiring literacy reportedly find it easier to read text that resembles real speech, which commercial materials can only imitate in an inauthentic way (Bell & Burnaby, 1984, cited in Shank, 1986).

Adult ELLs Need Basic Classroom Skills.
Nonliterate learners need to develop very basic classroom skills to succeed in traditional classroom settings. Klassen (1991) recorded the painful experiences of adult nonliterate ELLs having to practice basic skills in classes with literate students, who could move quickly through tasks. When adult nonliterate subjects were taught typical literacy-based skills, such as seeing details in pictures and differences in shapes or learning how to scan left to right, they acquired literacy skills more rapidly and more effectively than did those not taught such skills (Ardila & Moreno, 2001).

Curriculum and Class Activities can be More Easily Adapted.
Instruction can be adapted to suit the specific needs of learners when learners are grouped separately. These adaptations can include culturally driven adaptations (Hardman, 1999; Hvitfeldt, 1985; Podeschi, 1990),

adaptations for specific content (Chapman & Williams, 2008, or an educational approach developed for a specific group (Gaul, 1982).

Literacy instruction for those who are non-print-literate should be part of a larger vision in which learners' lives, oral culture, and other skills and knowledge are all part of the curriculum and classroom. There is a high degree of consensus in the literature that classroom learning for the non-print-literate should have a highly functional, personal focus—more so for them than for other adult language learners (Gaul, 1982; Huntley, 1992; Klassen & Burnaby, 1993; Lado, 1991; McKay & Weinstein-Shr, 1993; Shank, 1986; Southwestern Cooperative Educational Lab, 1969; Whiteside, 2008; Williams & Chapman, 2008).

Native Language Literacy Instruction Should be Offered Where Possible.

Non-print-literate adult learners tend to persist better in native language literacy classes (Auerbach, 1993, Cook & Quiñones, 1983; Gillespie, 1994; Ingersoll, 2001; Lado, 1991; Wrigley & Guth, 1992), and programs offering native language literacy have had some limited success in helping them acquire L2 literacy (Ingersoll, 2001).

The few studies of adults acquiring L1 literacy indicate that a major advantage of this approach is that it facilitates the cognitive leap into understanding how speech is represented in text and how text conveys meaning. According to Robson (1983) and others, once that leap has been made, other literacy skills are not so difficult. Gillespie (1994) cited four distinct advantages for learners to having instruction in native language literacy, including that when learners know that their teacher is fluent in their language, they can ask questions and discuss learning issues frankly and coherently, instead of feeling helpless and overwhelmed in an English-only class. Gillespie posited that native language literacy instruction also holds other important advantages for non-print-literate adults, including reducing their marginalization within their own language communities and increasing their empowerment and standing in the wider community. Perhaps more significant, Gillespie (1994) noted, is that non-print-literate adults often find traditional ESOL settings to be "alien institutions" (p. 8), where they encounter confusion, stress

and other negative experiences (Klassen & Burnaby, 1993; Lado, 1991; Solorzano, 1994).

Learning to read in a familiar language has neurological advantages as well. Adult learners' brains do not process the sounds of the new language clearly (Kuhl, 2000, 2004), and learners may not know enough about the new language phonologically to make sense of the writing system that encodes hard-to-hear sounds (Boon & Kurvers, 2008). Reduced perception of sounds impedes development of critical phonological skills in a new language and, therefore, of reading skills, even in highly literate ELLs (Yamada, 2004).

Native language literacy is not possible for all learners, however. Many adult English learners speak unwritten (or historically unwritten) languages (e.g., Dinka, Somali Bantu and indigenous languages of Mexico and Central and South America) as their first or dominant language. It is also difficult to find qualified instructors and appropriate instructional materials (Ingersoll, 2001). Finally, some learners may reject the idea of becoming literate in their L1, preferring to focus time and energy on English literacy, because English literacy has more status than L1 literacy or because learners feel they will not learn English if they are constantly using their L1 (Gillespie, 1994).

Preliteracy instruction should precede print-based literacy instruction. Several findings support the need for separate classes for adult ELLs. Cognitive research cited in this paper indicates that a great deal of preparation is needed before actual reading instruction begins. Shank (1986) has raised the question of whether native language literacy is "the key factor in SLA or if instruction focused on prerequisite cognitive skills necessary for reading (regardless of what language they are taught in) is the causal factor" (p. 13). Haverson and Haynes (1982) outlined a detailed list of skills to be addressed as part of preliteracy preparation for non-print-literate adult ELLs, and cognitive research has confirmed that non-print-literate adults lack the following skills:

> *Segmentation skills/phonological awareness.* Adults lacking print literacy typically do not understand that speech is made up of meaningful segments (Gombert, 1994; Juffs & Rodrigues, 2008; Kosmidis, Tsapkini, Folia, Vlahou, & Kiosseoglou, 2004; Kurvers et al.,

2006; Royer et al., 2004). Kurvers and van de Craats (2007) argued that just being an adult does not generate segmentation awareness. Morais, Content, Bertelson, Cary & Kolinsky, (1988) showed in a small experiment that adults with no literacy were able to acquire the skill of segmentation of words into phonemes quire rapidly with training. Similar explicit instruction in the sound segments of speech proved helpful for adults acquiring print literacy for the first time (Gombert, 1994; Royer et al., 2004), .

Phonemic awareness, which requires being aware of sound segments at the sublexical level, is considered critical to reading in an alphabetic language such as English (Durgonoglu; 1998; Durgonoglu, & Öney, 2002; Ziegler & Goswami, 2005). Young-Scholten and Strom (2006) confirmed that adult nonliterates resemble preliterate children in that both groups have very low phonological awareness and lack phonemic awareness almost completely. This study, while small, showed that though all participants "demonstrated solid knowledge of the alphabet in their ability to read letters in different fonts and out of order…many demonstrated no phonemic awareness and no decoding ability" (p. 63). This finding argues that phonemic awareness must be explicitly taught and not be assumed to develop with alphabet instruction.

Metalinguistic awareness. Evidence cited earlier indicates that nonliterate adults generally do not think about language in abstract terms (Gombert, 1994; Kurvers et al., 2006; Shank 1986). They gradually learn how to think about language and ideas more abstractly. Gombert's (1994) study indicated that direct instruction in metalinguistic awareness supports literacy acquisition.

Visual-perceptual and visual discrimination skills. These are skills needed for dealing systematically with two-dimensional information on a page and for discerning such things as punctuation marks, the orientation of letters, and spaces between words in text. These skills are likely to be quite weak in non-print-literate adults (Greenfield, 1997; Ostrosky-Solis, García, & Pérez, 2004). Haverson and Haynes (1982), for example, recommended that non-print-literate adults receive training in such things as left-to-right and top-to-bottom processing of visual information. Studies on the visual scanning of adult nonliterates confirm that systematic scanning of a visual field is a skill associated with learning to read (Ardila et al., 1989; Bramão et al., 2007).

Haverson and Haynes (1982) recommended developing a shared way of interpreting pictures, "the life-blood of ESL teaching" (p. 6), because research shows that non-print-literate adults do not always understand pictures as representations of real things (Greenfield, 1997). Stylistic aspects of drawings impede comprehension for these learners (Comings & Soricone, 2005; Hvitfeldt, 1985; Nurss, 1998) and the processing of two-dimensional information, particularly if it is black-and-white (Reis, Faísca, Ingvar, & Petersson, 2006).

Fine and gross motor skills/visual-motor integration skills (copying). A frequent observation in the literature is that non-print-literate adults lack or have very weak fine motor and visual integration skills (Klassen, 1991; Solorzano, 1994). Ostrosky-Solis et al. (1998) found that, of all tasks on a neuropsychological test battery, copying figures was most affected by lack of education. When learners copy slowly, this activity can take up most of the class time and distract them from paying attention to what is happening in the class. This was found to be a negative strategy used by most of the learners in Vinogradov's (2008) study of nonliterate adult ELLs. Copying figures is best done in separate classes, to allow learners adequate time for practice.

Literacy instruction should involve a balanced approach. Though the actual empirical evidence is weak in the area of how literacy instruction should proceed for non-print-literate adults, there is some indication that a combination of word recognition and decoding is effective,

rather than using either approach exclusively (Boon & Kurvers, 2008; Trupke-Bastidas & Paulos, 2008). At the end of the study in Tasmania, even those learners designated preliterate at the beginning were able to recognize words such as electrocute and appliance because the words had been taught in highly meaningful contexts (Williams & Chapman, 2008). Boon and Kurvers (2008) observed that adults in the East Timor literacy program instructed largely in word recognition could read more words faster in Portuguese, their L2, than could those taught a strict decoding approach. Mrowicki (1983) many years earlier recommended a "sight word" approach for those in "literacy" classes, (i.e. those with no or extremely limited prior education) as opposed to a phonics-based approach. As seen in the study in East Timor, whole-word approach may result in greater fluency, supporting Solorzano's (1994) contention that "phonetic analysis is a highly abstract skill eluding most [ESL] learners" (p. 5).

Reading comprehension must be built gradually.

Letters have meaning. One of Klassen's interviewees made plain the problem of understanding that letters make words: "I copied from the blackboard, but I don't know what it says. I copied it for writing practice… I still don't know what all of the letters are" (Klassen, 1991, p. 8). Young-Scholten and Strom (2006) also reported that, though their subjects knew the alphabet well, they could not decode words. When whole-word recognition was taught to literacy learners first, this difficulty was avoided (*cf.* Boon & Kurvers, 2008; Shank, 1986; Williams & Chapman, 2008). Instruction can return to decoding once the learner has mastered word recognition (Haverson & Haynes, 1982; Trupke-Bastidas & Poulos, 2008; Vinogradov, 2008).

Pictures carry meaning and relate to text. Williams and Chapman (2008) found that using content based entirely on learners' lives resulted eventually in their recognition that books could be relevant to their daily lives.

Several took home books specially designed for them to read and to teach family members about the home safety issues addressed in the books. In contrast, other researchers have reported that nonliterate learners or those with very low literacy are often confused by what they are asked to read in generic, commercial materials not specifically relevant to the group of learners in question (Gillespie, 1994; Klassen & Burnaby, 1993; Lado, 1991; Solorzano 1994).

Using pictures to support print literacy is an important strategy for new readers (Wrigley, 1993). But when pictures intended to illustrate do not aid, but rather confuse, students, then comprehension of the text is impeded (Comings & Soricone, 2005; Hvitfeldt, 1985; Whiteside, 2008). Whiteside explored the confusion of very beginning adult ELL readers who were baffled by pictures referenced in their text. Their teachers recognized that students were not getting the cues that the pictures conveyed. She found that certain types of reference pronouns, time references and text not specifically referring to the speaker caused the confusion (Whiteside, 2008). Understanding this barrier, teachers in the project described by Williams and Chapman (2007) made a special effort to use photographs of people "representative of people in the refugee community—appropriate cultural role models with whom the students could identify" (p. 129). This approach was deemed successful in that the "[African] students…responded very positively to and identified with the African role models in the photographs…and used the parent in the books as an example of someone in their community for teaching their own children about safety" (p. 135). In a literacy program in Nepal, learners had great difficulty understanding the concept of a story in drawings, even though familiar daily activities were illustrated (Comings & Soricone, 2005). For the pictures to support basic reading, learners had to be taught how to interpret the stylized drawings (Hvitfeldt, 1985) and to understand the sequential nature of the pictures (Comings & Soricone, 2005).

These basic notions—understanding that letters make meaningful words, that text can relate to lives and personal needs and that pictures relate to text—are foundational skills that should be mastered to develop reading

comprehension in those for whom text is new. Although empirical evidence is not robust, accumulated evidence from many types of scholarship indicates that literacy instruction must be tailored specifically to the unique needs of adult ELLs learning to read and write for the first time. Educators should feel confident in heeding what is known from existing literature while waiting for more and better research to emerge.

Professional Development for Teachers

To work effectively with adults who have limited formal schooling and very low print literacy, educators need professional development opportunities that will help them serve this population (Schaetzel, Peyton, & Burt, 2007; Vinogradov, 2009). Recognizing that literacy learners have unique needs, organizations establishing community-based literacy programs often employ local volunteers whose training is not sophisticated (i.e., no college courses in teacher education) but nonetheless includes learning very specific strategies and practices known to support adult literacy learning (Comings & Soricone, 2005). Because teacher education typically focuses on practices based in text, educators of adults lacking print literacy would also profit from learning about oral language and how it differs from literacy in general and within the cultures of the specific learners they teach. For instance, when a learner's beginning oral skills emerge in a new language, there is no reason to expect that the characteristics and usage of the new language will be dramatically different from the oral language the learner already has. In the literacy programs of World Education (Comings & Soricone, 2005), instruction is designed so that oral skills are used to bridge to literacy skills. Learning to engage oral skills is essential because of the initial barrier posed by text for adult ELLs without print literacy.

Lee (1992) described three different approaches to improving the reading comprehension skills of young adolescent learners through use of oral traditions in three culturally different populations. Her insight into how oral skills relate to literacy is helpful in thinking about moving the nonliterate into literacy. Useful information about oral skills might include learners' knowledge of rhetorical structures, evident in their ability to recite poetry; tell stories with a moral, riddle or joke; or engage in word-play (such as puns) in their dominant language. Sarroub (2005) posited that oral practices such as the recitation of religious texts are useful bridges to print literacy practices in English.

Sensitivity to learners' prior experience with formal education is an essential part of teacher preparation (Schaetzel et al., 2007). Peyton and colleagues (2007) and Faux (2006) documented two professional development experiences. Peyton described a professional development process across 24 states to improve the effectiveness of adult ESOL practitioners. Faux outlined the topics teachers should know and the skills they should have to teach adult ELLs with limited formal schooling. Students who have negative or no prior formal learning experiences need encouraging, positive teachers to welcome them into this new learning community. (See Mathews-Aydinli, 2008, for a review of teacher-related studies.) As in any classroom, it is useful for teachers of nonliterate ELLs to know as much as possible about their students' language, culture and cultural history, as well as their migrant, immigrant or refugee stories. It is also important to understand the experience of being in school for the first time or becoming literate for the first time as an adult. This understanding should inform the creation of a welcoming learning environment and scaffolded instruction that includes teaching emergent literacy skills (e.g., identifying shapes, using pictures to aid oral comprehension and predict events in a text).

Reiterating many of the recommendations made by Haverson and Haynes (1982) more than 25 years ago, Vinogradov (2009) outlined these and other skills and knowledge useful to teachers of adult ELLs who are learning the most basic literacy skills. She listed knowing, and knowing how to teach, the components of reading (phonemic awareness, phonics, vocabulary, fluency and comprehension) and balancing literacy instruction by drawing on a range of pedagogies based on L1 and L2 literacy research. Teachers must know how to teach learning strategies and study skills appropriate for adults at the preliterate and beginning stages of print literacy development. They should also know how to assess literacy and language skills in L1 and L2 across modalities and to assess student needs.

Teachers of nonliterate adult ELLs would benefit from some understanding of the field of second language acquisition (SLA). The debate about the pros and cons of native language literacy instruction is grounded in SLA. Using learners' native language for clarification during instruction has been found to be a positive instructional practice, demonstrating that the native language can be a part of class in at least this minimal way (Auerbach 1993; Condelli, Wrigley, & Yoon, 2002; Nurss, 2004). D. J. Francis, Lesaux, and August (2006) did a thorough review of the research on language of instruction in a range of K–12 settings (e.g., French immersion, English only, bilingual) and concluded that "there are no negative effects and, in many cases, positive effects of bilingual approaches to instruction" (p. 398). Teachers who are bilingual in the target language and learners' native language have a tremendous advantage. Being bilingual, however, does not necessarily mean the teacher understands metalinguistic concepts in both languages or knows how to make concepts clear to the unschooled. Ideally, this teacher would have a complete understanding of the structure of the learners' language and professional development focused on teaching native language literacy.

Teachers of adult ELLs without print literacy must be multifaceted. They must have the ability to attend to the unique affective and instructional needs of these learners. This is all the more difficult because few teacher education programs have the time or expertise to offer comprehensive preparation such teachers.

Questions for Research and Practice

The review of research cited in this paper makes it clear that Mathews-Aydinli's (2008) point rings true: The enormous diversity among adult ELLs "makes it all that much more important that researchers focusing on adult English language learners identify and develop broad research themes along which to build up common knowledge within the field, rather than a kind of ad hoc approach, in which little or no attempt is made to connect studies with each other" (p. 205). Further, because research routinely develops in isolation from knowledge produced in other

complementary academic fields, is conducted in settings outside the United States or is published in languages other than English, seeing the convergence of lines of research is difficult. Many research programs across a wide range of disciplines contribute to the knowledge base about the uniqueness of adult ELLs with respect to their experience, cognition, motivation and so on. Each strand of research is growing incrementally and often in intradisciplinary, rather than interdisciplinary, ways. For this reason, research in the area of adult English language learning has the distinctive challenge of focusing the research agenda in a way that is international and interdisciplinary.

There is a growing knowledge base about how adults acquire literacy skills in English, but this knowledge base must both expand and focus more closely on adult ELLs lacking print literacy. Study participants' literacy levels in their native and second languages should be carefully measured and tracked in future studies where literacy is a testable variable. Further, many pedagogical practices, ranging from overarching program issues to curriculum to instructional strategies, should be rigorously scrutinized. The closer the research is to learners and the settings in which they learn, the more it is likely to be transferable to classroom practices that make a difference for these adult ELLs.

Generating more and better research is worthwhile because there is every reason to believe that immigrant and refugee adults with limited formal schooling will continue to move to the United States and other countries where print literacy is valued. Educators must understand learners' strengths and needs to craft suitable educational programs and curricula, as well as productive and welcoming learning environments. Future research should build on both the existing literature and educators' problems of practice. The following are some questions arising from this review of interdisciplinary and international research:

What is the trajectory of reading development for adults ELLs without print literacy? Research on L2 reading generally focuses on literate learners learning to read in another language (Carlo & Skilton-Sylvester, 1996; Koda, 2004, 2007) or on children learning to read English (August & Shanahan, 2006b). Wagner, Francis and Morris (2005) cited the lack of norms for adult ELLs as a major problem in understanding what is normal and what is not in learning English and acquiring literacy. Green and Reder's

(1986) study illustrates the challenge of recognizing normal literacy development. They found that rates of learning and ultimate attainment among their participants stayed uniform across their longitudinal study. That is, those who had low proficiency at the beginning continued to have low proficiency throughout the study. No single study examines the trajectory of reading in non-print-literate adult ELLs (Burt, Peyton, & van Duzer, 2005). A study of this development trajectory must consider a range of sociocultural and cognitive factors.

Is there a separate pedagogy for adult ELLs without print literacy? Much of the literature about teaching reading to non-print-literate adults is based on reading development in either children (e.g., August & Shanahan, 2006) or literate adults (e.g., Birch, 2006). It is often suggested that some techniques can be suitable for instructing nonliterate adults, if carefully adapted (Burt et al., 2005, 2008). But research—including practitioner research—is needed to determine what types of programs and instruction are most effective for nonliterate adult ELLs.

Examining theoretical aspects of teaching nonliterates, Shank (1986) commented that, lacking a pedagogy to guide them, "educators looked to reading theorists for guidance in making practical choices. Many believe that knowing what 'good readers' do will help them to understand the difficulties of illiterates learning to read in an L2 and thus help to identify pedagogical strategies for approaching reading instruction for these students" (p. 15). As Shank suggested, the realities of nonliteracy demand a separate reading pedagogy for these learners. Of all factors seen as affecting reading acquisition (Burt et al., 2005), the lack of any formal education and of prior print literacy are major individual factors to be explored. Research offers some insight into the preliteracy needs of these adults, but little into how moving into literacy is best accomplished. Much more research is needed on all aspects of the development of phonological awareness in nonliterate adults, how phonological awareness in the learner's first language influences literacy development, and what role oral proficiency in L2 plays in L2 literacy for those with no prior literacy (b & Shanahan, 2006).

Studies of specific approaches or curriculum for non-print-literate adult learners typically report results very vaguely. For example, Williams and Chapman (2008) reported that learners studying their specially designed curriculum were "more successful than expected," but they provided no hard data. Young-Scholten and Strom (2006), while acknowledging the factors influencing literacy acquisition, suggested that with "sufficient time and effort, even adults without any native language schooling can become literate in English" (p. 64). They did not make clear, however, what exactly "sufficient time and effort" means.

Is L2 language/literacy best acquired within a classroom setting? Classroom L2 learning in general is more frequently studied and documented than is naturalistic L2 learning. Therefore, while little is known about this learning inside the classroom, even less is known about learning outside the classroom. In the absence of literacy, it may be more difficult to process information valued in classroom learning (e.g., Petersson et al., 2000), thus making formal instruction initially difficult for those with no prior literacy.

Which teaching approaches work in a formal classroom setting? Many claims are made for the Language Experience Approach, in which learners dictate something in their own words and the teacher transcribes it and then uses that text for many activities to help the learners read their own words (Solorzano, 1994). Unfortunately, no data are available on the effectiveness of this approach. Furthermore, a clear notion of what success looks like with this population should govern investigation into which approaches are successful.

What factors influence the development of English proficiency and literacy for adult ELLs without print literacy? Besides their L1 literacy and educational background, many other important factors influence L2 literacy development among adult ELLs with limited formal schooling. These factors may include age, prior proficiency in the L2, goals for learning English, economic conditions and living situations (Burt et al., 2005). Green and Reder (1986) found that gender sometimes exerted an influence on learning but that, surprisingly, oral proficiency in another language besides L1 (not English) played no significant role in English acquisition. Juffs and Rodrigues (2008) reported that lack of L1 literacy had a significant negative impact on phonological memory and development of L2 literacy, while lack of education outweighed all other factors influencing the performance of nonliterate or very low literate adults on a neuropsychological battery (Ardila &

Moreno, 2001). Boon and Kurvers (2008) reported that the level of transparency (predictability of the sound–symbol correspondence) of text to be learned heavily influenced the rate and degree of success of literacy acquisition among non-print-literate adults in East Timor.

Of all the variables explored, age seems to be significant. Shank (1986) cited research on learning that indicates that adult learners differ from child learners physically—their vision changes and hearing and motor skills decline—and adults are less able to learn in conditions of mild discomfort. Green and Reder (1986) found that, among the Hmong adults they studied, age was a significant factor in learning, whereas time in the United States or attending classes was not. Age also has been found to have a strong negative effect on adults' performance on visual-perceptual and memory tasks (Ostrosky-Solis et al., 1998). Williams and Chapman (2008) noted a large difference in learning rates and styles between younger nonliterate adult ELLs (in their 20s) and older learners in their project.

Age especially appears to influence oral language acquisition. Shank cited the view of Krashen and colleagues that children are generally superior to adults in acquiring the phonology of a new language (1986). This proposition is firmly supported by neurocognitive research indicating that the maturing brain's ability to hear and process unfamiliar speech sounds declines steadily, and that adults generally have a much harder time learning the auditory aspects of a new language (Kuhl, 2000, 2004).

Kurvers and van de Craats (2007), however, after examining matched pairs of learners proficient and not proficient in their L2 (Dutch), found no consistent factors predicting L2 learning—not age, time in the new country, years of L2 instruction, socioeconomic status, family situation or phonological memory. They concluded that it is nearly impossible to know what influences language acquisition, reading and literacy skill development or to predict who will develop strong skills in a new language. More research clearly is needed on how individual differences influence literacy acquisition.

How does learning to be literate in an unfamiliar language influence the acquisition of literacy skills? Becoming literate in an L2 is different from becoming literate in an L1, for learners of any age or language background (Bernhardt, 1991). But how does this distinction play out among adult

ELLs who are not literate? Boon and Kurvers (2008) observed that nonliterate adults in East Timor who were participating in literacy programs struggled with the sounds and segments of Portuguese, their L2. This finding coincides with neurocognitive research showing the adult brain's reduced ability to process and reproduce unfamiliar speech sounds (Kuhl, 2000, 2004). It is difficult to learn an L2 while simultaneously becoming literate for the first time in the L2. Certainly, adults can become literate in their L1, but little is known about adult ELLs becoming literate in a new language. More research is needed on the effects of multilingualism on such things as vocabulary transfer and phonological awareness in a new language.

How does knowledge of a first language other than English influence the acquisition of English literacy? Because reading is making sense of language encoded in print, knowing more than one language influences how a learner makes sense of reading (Koda, 2007). What meaning is the reader taking from a text, for example, or how does the phonology of the different languages interact with learning the phonology, and then phonics, of English? Though it is generally assumed that knowledge of one language influences acquisition of another (see Genessee, Geva, Dressler, & Kamil, 2006, for a discussion of Cummins' interdependency hypothesis), Greene and Reder (1986) found in their Hmong learners that fluency in another language had virtually no discernible effect on their learning English. There is a notable lack of research in the field of literacy acquisition of non-English speakers on languages other than Spanish (Genessee et al., 2006), an observation especially important for non-print-literate adults, many of whom speak African or Asian languages or the indigenous languages of Mexico and Central and South America (Juffs & Rodrigues, 2008).

Unlike children, adults have fully developed L1 oral skills (Kurvers et al., 2007). How does that fact influence the acquisition of a new language? While there is a body of research on how children's oral language influences reading (*cf.* Atwill et al., 2007; August & Shanahan, 2006**b**; J. F. Miller et al., 2006), research is needed on how adult L1 oral skills influence the development of adult L2 literacy skills, especially the role of "specific aspects of first language linguistic knowledge (e.g., cohesion, syntactic complexity, decontexualized oral language skills, range

and type of vocabulary, familiarity with various discourse genres)" (August & Shanahan, 2006b, p. 169) in L2 literacy acquisition processes.

Which assessments are most appropriate for evaluating the knowledge, skills and progress of non-print-literate adult ELLs? The wide range of research on psychological testing with nonliterate adults, plus evidence from other types of studies, indicates that testing even the nonverbal skills of nonliterate adult learners is fraught with difficulties (c.f. Ardila & Moreno, 2001; Ardila et al., 2000; LDA of Minnesota, 2006). Culture and unfamiliarity with two-dimensional information interfere with assessment using pictures, and lack of literacy education influences outcomes on nonword repetition or other phonologically based tasks. For example, while phonological awareness is considered key to reading and literacy development, Juffs and Rodrigues (2008) found that administering and scoring the Comprehensive Test of Phonological Processing was very difficult with non-print-literate adult ELLs. These participants did not understand the prompts, or their utterances were so influenced by their first language that scoring was difficult. Many existing ESOL tests are inappropriate for measuring the progress of non-print-literate learners (MacSwan & Rolstad, 2006). Because non-print-literate adults have few skills related to reading, tests measuring such factors as phonemic awareness or skills related to reading may be invalid at the beginning stages of instruction. Further, non-print-literate learners may be disheartened by testing that highlights their weaknesses (Ardila & Moreno, 2001; Juffs & Rodrigues, 2008; LDA of Minnesota, 2006).

As this list of questions indicates, the most basic information about non-print-literate adult ELLs has yet to be researched adequately. There are few definitive answers. This paper provides an overview of the wide range of research and literature that has touched on the many complex issues concerning these learners and efforts to help them become literate for the first time. It also demonstrates that, although many fundamental concerns have been discussed over several decades, an acute need remains for more and better research specifically on this unique population of learners, so that meaningful and effective instruction can be provided to them.

References

Abdi, C. M. (2007). Convergence of civil war and the religious right. *Signs: Journal of Women in Culture and Society,* 33(1), 183–207.

Adrian, J. A., Alegria, J., & Morais, J. (1995). Metaphonological abilities of Spanish illiterate adults. *International Journal of Psychology, 3,* 329–353.

Ardila, A., & Moreno, S. (2001). Neuropsychological test performance in Aruaco Indians: An exploratory study. *Journal of International Neuropsychology, 7*(4), 510–551.

Ardila A., Ostrosky-Solis, F., & Mendoza, V. U. (2000). Learning to read is much more than learning to read: A neuropsychologically based reading program. *Journal of the International Neuropsychological Society, 6*(7), 789–801.

Ardila, A., Rosselli, M., & Rosas, P. (1989). Neuropsychological assessment in illiterates: Visuospatial and memory abilities. *Brain and Cognition, 11*(2), 147–166.

Atwill, K. K., Blanchard, J., Gorin, J. S., & Burstein, K. (2007). Receptive vocabulary and cross-language transfer of phonemic awareness in kindergarten children. *Journal of Educational Research, 100*(6), 336–346.

Auerbach, E. R. (1993). *Making meaning, making change: A guide to participatory curriculum development for adult ESL and family literacy.* McHenry, IL: Center for Applied Linguistics and Delta Systems, Inc.

Auerbach, E. R. (1996). Reexamining English only in the ESL classroom. *TESOL Quarterly, 27*(1), 9–32.

August, G. (2006). So, what's behind adult English second language reading? *Bilingual Research Journal, 30*(2), 245–264.

August, D., & Shanahan, T. (Eds.). (2006a). *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth.* Mahwah, NJ: Lawrence Erlbaum.

August, D., & Shanahan, T. (Eds.). (2006b). *Executive Summary: Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth*. Mahwah, NJ: Lawrence Erlbaum. Retrieved August 31, 2009, from http://www.cal.org/projects/archive/nlpreports/executive_summary.pdf.

Bell, J. & Burnaby, B. (1984). <u>A Handbook of ESL Literacy.</u> Toronto, Ontario: Oise Press.

Bernhardt, E. B. (1991). *Reading development in a second language: Theoretical, empirical, and classroom perspectives*. Norwood, NJ: Ablex Publishing Corporation.

Bialystok, E. (2001). *Bilingualism in development: Language, literacy, and cognition*. Cambridge, England: Cambridge University Press.

Bigelow, M. (2007). Social and cultural capital at school: The case of a Somali teenage girl with limited formal schooling. In N. R. Faux (Ed.), *Low-educated adult second language and literacy acquisition proceedings of symposium* (pp. 7–22). Richmond, VA: Literacy Institute at Virginia Commonwealth University.

Bigelow, M., delMas, R., Hansen, K., & Tarone, E. (2006). Literacy and the processing of oral recasts in SLA. *TESOL Quarterly, 40*(4), 665–689.

Birch, B. (2006). *English L2 reading: Getting to the bottom*. Mahwah, NJ: Lawrence Erlbaum.

Boon, D., & Kurvers, J. (2008). Learning to read in Portuguese in East Timor: Strategies of adult literacy learners. In M. Young-Scholten (Ed.), *Low-educated adult second language and literacy acquisition: Proceedings of the third annual forum* (pp. 75–90). New Castle upon Tyne, England: Newcastle University.

Bramão, I., Mendonça, A., Faísca, L., Ingvar, M., Petersson, K. M., & Reis, A. J. (2007). The impact of reading and writing skills on a visual-motor integration task: A comparison between illiterate and literate subjects. *International Neuropsychological Society, 13*(2), 359–364.

Brito-Marques, P. R., & Cabral-Filho, J. E. (2005). The role of education in mini-mental state examination: A study in Northeast Brazil. *Arquivos de Neuro-Psiquiatria, 62*(2A), 206–211.

Brod, S. (1995). *Outreach and retention in adult ESL literacy program* (ERIC Document Reproductive Service No. EDO-LE-95-01). Washington, DC: National Clearinghouse for ESL Literacy Education.

Brown, M. (1996). Developing a native language literacy program. *Adventures in Assessment, 2*, 23–29. Retrieved August 6, 2009, from http://www.sabes.org/resources/publications/adventures/vol9/9brown.htm

Brucki, S. M., & Rocha, M. S. (2004). Category fluency test: Effects of age, gender and education on total scores, clustering and switching in Brazilian Portuguese-speaking subjects. *Brazilian Journal of Medical and Biological Research, 7*(12), 1771–1777.

Burt, M., & Peyton, J. K. & Adam, R. (2003). *Reading and adult English language learners: The role of the first language*. Washington, DC: Center for Applied Linguistics. Retrieved August 31, 2009, from http://www.cal.org/caela/esl_resources/digests/reading.html.

Burt, M., Peyton, J. K., & Schaetzel, K., Center for Applied Linguistics. (2008). *Working with adult English language learners with limited literacy: Research, practice and professional development*. Retrieved August 31, 2009, from http://www.cal.org/caelanetwork/resources/limitedliteracy.html

Burt, M., Peyton, J. K., & van Duzer, C. (2005). *How should adult ESL reading instruction differ from ABE reading instruction?* Washington, DC: Center for Applied Linguistics. Retrieved August 31, 2009, from http://www.cal.org/caela/esl_resources/briefs/readingdif.html

Burtoff, M. (1985). *The Haitian Creole literacy education study* (Final Report). New York, NY: Ford Foundation.

Carlo, M., & Skilton Sylvester, E. (1996). *Adult second-language reading research: How may it inform assessment and instruction?* (Technical Report TR96-08). Philadelphia: University of Pennsylvania, National Center for Adult Literacy.

Castro-Caldas, A. (2004). Targeting regions of interest for the study of the illiterate brain. *International Journal of Psychology, 39*(1), 5–17.

Castro-Caldas, A., Petersson, K. M., Reis, A., Stone-Elander, S., & Ingvar, M. (1998). The illiterate brain: Learning to read and write during childhood influences the functional organization of the adult brain. *Brain and Language, 121*(6), 1053–1063.

Castro-Caldas, A. & Reis, A.. (1997). Illiteracy: A cause for biased cognitive development. *Journal of the International Neuropsychological Society (3), 444-450.*

Castro-Caldas, A., & Reis, A. (2003). The knowledge of orthography is a revolution in the brain. *Reading and Writing, 16*(1–2), 81–97.

Clahsen, H., Meisel, J. M., & Pienemann, M. (1983). *Deutsch als Zweitsprache. Der Spracherwerb auslandischer Arbeiter.* Tubingen, Germany: Narr.

Comings, J., & Soricone, L. (2005). The world education approach to adult literacy program design. Boston, MA: World Education.

Condelli, L., & Wrigley, H. S. (2006). Instruction, language and literacy: What works study for adult ESL literacy students. In I. van de Craats, J. Kurvers, & M. Young-Scholten (Eds.), *Low-educated adult second language and literacy acquisition: Proceedings of the inaugural symposium* (pp. 111–133). Utrecht, The Netherlands: LOT.

Condelli, L., Wrigley, H. S., & Yoon, K. (2002). *What works study for adult ESL literacy students: Study summary.* San Mateo, CA: American Institutes for Research.

Cook, J., & Quiñones, A. (1983). *Spanish literacy investigation project.* Albany: New York State Department of Education (ERIC Document Reproductive Service No. ED 234 182).

Curtis, M. E., & Kruidenier, J. R. (2005). *Teaching adults to read.* Washington, DC: Partnership for Reading. Retrieved September 18, 2008, from www.nifl.gov/partnershipforreading/publications/html/teach_adults/teach_adults.html.

Dellatolas, G., Braga, L. W., Loureiro C. D. S., Filho, G. N., Queiroz, E., & Deloche, G. (2003). Cognitive consequences of early phase of literacy. *Journal of International Neuropsychological Society, 9*, 771–782.

Dellicarpini, M., & Engleman, S. (May 2006). Are we meeting the needs of adult ESOL students in their literacy classes? *Literacy Update*, pp. 1–14. *2007 Issue.* New York, NY: Literacy Assistance Center.

Dirkx, J. M. (2006). Studying the complicated matter of what works: Evidence-based research and the problem of practice. *Adult Education Quarterly, 56*(4), 273–290.

Doughty, C., & Williams, J. (1998). Pedagogical choices in focus on form. In C. Doughty & J. Williams (Eds.), *The Cambridge Applied Linguistics Series: Focus on form in classroom SLA* (pp. 197-261). Cambridge: Cambridge University Press.

Dowse, R., & Ehlers, M. S. (2003). The influence of education on the interpretation of pharmaceutical pictograms for communicating medicine instructions. *International Journal of Pharmacy Practice, 11*, 11–18.

Dufva, M., & Voeten, M. J. M. (1999). Native language literacy and phonological memory as prerequisites for learning English as a foreign language. *Applied Psycholinguistics, 20*(3), 329–348.

Durgunoğlu, A. Y. (1998). Acquiring literacy in English and Spanish in the United States. In A. Y. Durgunoğlu & L. Verhoeven (Eds.), *Literacy development in a multilingual context: Cross-cultural perspectives* (pp. 135–146). Mahwah, NJ: Lawrence Erlbaum.

Durgunoğlu, A. Y., & Öney, B. (2002). Phonological awareness in literacy acquisition: It's not only for children. *Scientific Studies of Reading, 6*(3), 245–266.

Ellis, N. (1996). Sequencing in SLA: Phonological memory, chunking, and points of order. *Studies in Second Language Acquisition, 18*, 91–126.

Espinoza-Herold, M. (2007). Stepping beyond *sí se puede: Dichos* as a cultural resource in mother-daughter interaction in a Latino family. *Anthropology and Education Quarterly, 38*(3), 260–277.

Faux, N. R. (2006). Preparing teachers to help low-literacy adult ESOL learners. In I. van de Craats, J. Kurvers, & M. Young-Scholten (Eds.), *Low-educated adult second language and literacy acquisition: Proceedings of the inaugural symposium* (pp. 135–142). Utrecht, The Netherlands: LOT.

Faux, N. (Ed.). (2007). *Low-educated second language and literacy acquisition: Research, policy and practice: Proceedings of the second annual forum*. Richmond, VA: The Literacy Institute at Virginia Commonwealth University.

Francis, D. J., Lesaux, N., & August, D. (2006). Language of instruction. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 365–413). Mahwah, NJ: Lawrence Erlbaum and Center for Applied Linguistics.

Gaul, P. (1982). *Developing and disseminating a curriculum in English language survival skills for pre- and non-literate speakers of other languages. Final report*. Philadelphia, PA: Center for Literacy.

Genessee, F., Geva, E., Dressler, C., & Kamil, M. (2006). Synthesis: Cross-linguistic relationships. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners* (pp. 153–174). Mahwah, NJ: Lawrence Erlbaum.

Gillespie, M. (1994). Rationales for adult native language literacy and directions for research (NCAL Technical Report TR94-03). Philadelphia: University of Pennsylvania, National Center on Adult Literacy.

Gombert, J. E. (1994). How do illiterate adults react to metalinguistic training? *Annals of Dyslexia, 44*, 250–269.

González, N., Moll, L. C., & Amanti, C. (Eds.). (2005). *Funds of knowledge: Theorizing practices in households, communities and classrooms*. Mahwah, NJ: Lawrence Erlbaum.

Grant, A. N. (1997). Debating intergenerational family literacy: Myths, critiques, and counter-perspectives. In D. Taylor (Ed.), *Many families, many literacies: An international declaration of principles* (pp. 216–222). Portsmouth, NH: Heinemann.

Green, K., & Reder, S. (1986, November). *Factors in individual acquisition of English: A longitudinal study of Hmong adults*. Paper presented at the Hmong Conference II: The Hmong in Transition, Minneapolis, MN.

Greenfield, P. M. (1997). You can't take it with you. *American Psychologist, 52*(10), 1115–1124.

Hardman, J. (1999). A community of learners: Cambodians in an adult ESL classroom. *Language Teaching Research, 3*(2), 145–166.

Haverson, W., & Haynes, J. (1982). ESL/Literacy for adult learners. In S. Behrens (Ed.), *Language in education: Theory and practice* (Number 49) Washington, DC: Center for Applied Linguistics.

Huntley, H. (1992). *The new illiteracy: A study of the pedagogic principles of teaching English as a second language to non-literate adults*. Unpublished manuscript (ERIC Document Reproduction Service No. ED 356 685).

Hvitfeldt, C. (1985). Picture perception and interpretation among preliterate adults. *Passage: A Journal of Adult Refugee Education, 1*(1), 27–30.

Ijalba, E. (2008). *Markers of dyslexia in adult Spanish speakers who report severe difficulty in learning English*. (Unpublished doctoral dissertation). City University of New York.

Batalova, J., Mittelstadt, M., Mather, M., & Lee, M. (2008). *Immigration: Data Matters*. Washington, DC: Migration Policy Institute and Population Reference Bureau. Retrieved on July 1, 2010 at http://www.migrationpolicy.org/pubs/2008DataGuide.pdf.

Ingersoll, C. (2001). *Meeting the language needs of low-literacy adult immigrants in Washington, DC and suburban Northern Virginia* (Report No. FL 801452; ERIC Document Reproduction Service No. ED 456 676).

Jimenez, J. E., & Venegas, E. (2004). Defining phonological awareness and its relationship to reading skills in low-literacy adults. *Journal of Educational Psychology, 96*(4), 798–810.

Johnson, E., & Terrill, L., Center for Adult English Language Acquisition. (2006). *Beginning- and literacy-level adult ESL learners*. Retrieved on September 29, 2009, from http://www.cal.org/caela/esl_resources/bibliographies/literacy.html

Juffs, A. (2006). Working memory, second language acquisition and low-educated second language and literacy learners. In I. van de Craats, J. Kurvers, & M. Young-Scholten (Eds.), *Low-educated adult second language and literacy acquisition: Proceedings of the inaugural symposium* (pp. 89–110). Utrecht, The Netherlands: LOT.

Juffs, A., & Rodriguez, G. (2008). Some notes on working memory in college-educated and low educated learners of English as a second language in the United States. In M. Young-Scholten (Ed.), *Low-educated adult second language and literacy acquisition: Proceedings of the third annual forum* (pp. 33–48). New Castle-upon-Tyne, England: Newcastle University.

Klassen, C. (1991). Obstacles to learning: The account of low-education Latin American adults. In B. Burnaby & A. A. Cummings (Eds.), *Sociopolitical aspects of ESL in Canada* (pp. 253–264). Toronto: Ontario Institute for Studies in Education Press.

Klassen, C., & Burnaby, B. (1993). Those who know: Views on literacy among adult immigrants in Canada. *TESOL Quarterly, 27*(3), 377–397.

Klein, W., & Perdue, C. (1997). The basic variety (or: Couldn't natural languages be much simpler?). *Second Language Research, 13*, 301–347.

Koda, K. (2004). *Insights into second language reading: A cross-linguistic approach*. Cambridge, UK: Cambridge University Press.

Koda, K. (2007). Reading and language learning: Crosslinguistic constraints on second language reading development. *Language Learning, 57*(Suppl. 1), 1–44.

Kolinsky, R., Cary, L., & Morais, J. (1987). Awareness of words as phonological entities: The role of literacy. *Applied Psycholinguistics, 8*, 223–232.

Kosmidis, M. H., Tsapkini, K., Folia, V., Vlahou, C., & Kiosseoglou, G. (2004). Semantic and phonological processing in illiteracy. *Journal of the Neuropsychological Society, 10*, 818–827.

Kruidenier, J. (2002). *Research-based principles for adult basic education reading instruction*. Washington, DC: National Institute for Literacy. Retrieved February 8, 2005, from http://www.nifl.gov/partnershipforreading/publications/html/adult_ed/index.html.

Kuhl, P. (2000). A new view of language acquisition. *Proceedings of the National Academy of Sciences of the United States of America, 97*(11), 850–857.

Kuhl, P. (2004). Early language acquisition: Cracking the speech code. *Nature Review: Neuroscience, 5*, 831–843.

Kurvers, J. (2007). Development of word recognition skills of adult L2 beginning readers. In N. R. Faux (Ed.), *Low-educated adult second language and literacy acquisition proceedings of symposium* (pp. 23–44). Richmond, VA: Literacy Institute at Virginia Commonwealth University.

Kurvers, J., & van de Craats, I. (2007). Memory, second language reading, and lexicon: A comparison between successful and less successful adults and children. In N. R. Faux (Ed.), *Low-educated adult second language and literacy acquisition proceedings of symposium* (pp. 65–80). Richmond, VA: Literacy Institute at Virginia Commonwealth University.

Kurvers, J., Vallen, T., & van Hout, R. (2006). Discovering features of language: Metalinguistic awareness of adult illiterates. In I. van de Craats, J. Kurvers, & M. Young-Scholten (Eds.), *Low-educated adult second language and literacy acquisition: Proceedings of the inaugural symposium* (pp. 69–88). Utrecht, The Netherlands: LOT.

Kurvers, J., van Hout, R., & Vallen, T. (2007). Literacy and word boundaries. In N. R. Faux (Ed.), *Low-educated adult second language and literacy acquisition proceedings of symposium* (pp. 45–64). Richmond, VA: Literacy Institute at Virginia Commonwealth University.

Lado, A. (1991). *Ways in which Spanish-speaking illiterates differ from literates in ESL classrooms* (Unpublished master's thesis). Georgetown University, Washington, DC.

LaLyre, Y. (1996). Issues in assessment of native language literacy. System for Adult Basic Education Support (SABES), Massachusetts Department of Education. *Adventures in Assessment*, 8, 19–29.

LDA of Minnesota. (2006). LD/ESL assessments. *NetNews 6*(2), 1.

Lee, C. (1992). Literacy, cultural diversity and instruction. *Education and Urban Society 24*(2), 279–291.

Levinson, M. P. (2007). Literacy in English Gypsy communities: Cultural capital manifested as negative assets. *American Educational Research Journal, 44*(1), 5–39.

Li, G., Cheung, R. T., Gao, J. H., Lee, T. M., Tan, L. H., Fox, P. T., . . . Yang, E. S. (2006). Cognitive processing in Chinese literate and illiterate subjects: An fMRI study. *Human Brain Mapping, 27*(2), 144–152.

Lindberg, I. (2003). Second language awareness: What for and for whom? *Language Awareness, 12*(3 & 4), 157–171.

Lovrien Schwarz, R. (2009). Issues in identifying learning disabilities for English language learners. In J. Taymans (Ed.), *Learning to achieve: A review of the research literature on serving adults with learning disabilities* (pp. 73–117). Washington, DC: National Institute for Literacy.

MacSwan, J., & Rolstad, K. (2006). How language proficiency tests mislead us about ability: Implications for English language learner placement in special education. *Teachers College Record, 108*(11), 2304–2328.

Manly, J. J., Jacobs, D. M., Sano, M., Bell, K., Merchant, C. A., Small, S. A., & Stern, Y. (1999). Effect of literacy on neuropsychological test performance in nondemented, education-matched elders. *Journal of the International Neuropsychological Society, 5*(3), 191–202.

Mansur, L. L., Radanovic, M., Araújo, G. de C., Taquemori, L. Y., & Greco, L. L. (2006). Boston Naming Test: Performance of Brazilian population from São Paulo. *Pro Fono, 18*(1), 13–20.

Mathews-Aydinli, J. (2008). Overlooked and understudied? A survey of current trends in research on adult English language learners. *Adult Education Quarterly, 58*(3), 198–213.

Mathuranath, P. S., George, A., Cherian, P. J., Alexander, A., Sarma, S. G., & Sarma, P. S. (2003). Effects of age, education and gender on verbal fluency. *Journal of Clinical Experimental Neuropsychology, 25*(8), 1057–1064.

Matute, E., Leal, F., Zarabozo, D., Robles, A., & Cedillo, C. (2000). Does literacy have an effect on stick construction tasks? *Journal of the International Neuropsychological Society, 6*(6), 668–672.

Menard-Warwick, J. (2005). Intergenerational trajectories and sociopolitical context: Latina immigrants in adult ESL. *TESOL Quarterly, 39*(2), 165–185.

Miller, J. F., Heilmann, J., Nockerts, A., Iglesias, A., Fabiano, L., & Francis, D. J. (2006). Oral language and reading in bilingual children. *Learning Disabilities Research and Practice, 21 (1)*, 30–43.

Miller, K. (2009, April 9). Reading between the lines. *Star Tribune*. Retrieved June 21, 2009, from http://www.startribune.com/lifestyle/11481491.html

Morais, J., Cary, L., Alegria, J., & Bertelson, P. (1979). Does awareness of speech as a sequence of phones arise spontaneously? *Cognition, 7*, 323–331.

Morais, J., Content, A., Bertelson, P., & Cary, L. (1988). Is there a critical period for the acquisition of segmental analysis? *Cognitive Neuropsychology, 5*, 347–352.

Morais, J., & Kolinsky, R. (2002). Literacy effects on language and cognition. In L. Bäckman & C. V. Hofsten (Eds.), *Psychology at the turn of the millennium* (pp. 507–530). Oxford, England: Psychology Press.

Mrowicki, L. G. (1983). Basic ESL literacy for the non-literate students. *NAAESC Occasional Papers, 2*(1), 1–11.

National Reporting System. (n.d.). *Characteristics of the least-literate participants in adult basic education beginning literacy programs: 2001–2005.* Retrieved July 28, 2008, from www.nrsweb.org/docs/fast%20facts/ Level1ABEFastfacts.pdf

Nurss, J. (1998). The effects of mother tongue literacy on South African adults' acquisition of English literacy. *Adult Basic Education, 8*(2), 111–119.

Olmedo, I. M. (1997). Voices of our past: Using oral history to explore funds of knowledge within a Puerto Rican family. *Anthropology and Education Quarterly, 28*(4), 550–573.

Ostrosky-Solís, F., Ardila, A., Rosselli, M., Lopez-Arango, G., & Uriel-Mendoza, V. (1998). Neuropsychological test performance in illiterate subjects. *Archives of Clinical Neuropsychology, 13*(7), 645–660.

Ostrosky-Solís, F., García, M. A., & Pérez, M. (2004). Can learning to read and write change the brain organization? An electrophysiological study. *International Journal of Psychology, 39*(1), 27–35.

Ostrosky-Solís, F., Ramirez, M., & Ardila, A. (2004). Effects of culture and education on neuropsychological testing: A preliminary study with indigenous and non-indigenous population. *Applied Neuropsychology, 11*(4), 188–195.

Perdue, C. (Ed.). (1993). *Adult language acquisition: Cross-linguistic perspectives*. Cambridge, UK: Cambridge University Press.

Petersson, K. M., Reis, A., Askelöf, S., Castro-Caldas, A., & Ingvar, M. (2000). Language processing modulated by literacy: A network analysis of verbal repetition in literate and illiterate subjects. *Journal of Cognitive Neuroscience, 12*(3), 364–382.

Petersson, K. M., Silva, C., Castro-Caldas, A., Ingvar, M., & Reis, A. (2007). Literacy: A cultural influence on functional left-right differences in the inferior parietal cortex. *European Journal of Neuroscience, 26*(3), 791–799.

Peyton, J. K., Burt, M., McKay, S., Schaetzel, K., Terrill, L., & Young, S. (2007). Professional development for practitioners working with adult English language learners with limited literacy. In N. R. Faux (Ed.), *Low-educated adult second language and literacy acquisition proceedings of symposium* (pp. 213–225). Richmond, VA: Literacy Institute at Virginia Commonwealth University.

Pienemann, M., Johnston, M., & Brindley, G. (1988). Constructing an acquisition-based procedure for second language assessment. *Studies in Second Language Acquisition, 10*(2), 217–243.

Podeschi, R. (1990). Teaching their own: Minority challenges to mainstream institutions. In J.M. Ross, L. G. Martin, & D. Buck Briscoe (Eds.), *Serving culturally diverse populations* (pp. 55–65). San Francisco, CA: Jossey-Bass.

Rackley, L. (2006). *Kenya: Humanitarian conditions worsen in Dadaab refugee camps*. Retrieved August 22, 2008, from http://www.care.org/newsroom/articles/2006/08/20060823_kenya_refugees.asp

Reder, S. (1994). Practice-engagement theory: A sociocultural approach to literacy across languages and cultures. In B. M. Ferdman, R.-M. Weber, & A. G. Ramírez (Eds.), *Literacy across languages and cultures* (pp. 33–74). Albany: State University of New York Press.

Reder, S., & Davila, E. (2005). Context and literacy practices. *Annual Review of Applied Linguistics, 25*, 170–187.

Reimer, J. (2008). Learning strategies and low-literacy Hmong adult students. *Minne/WITESOL Journal, 25.* Retrieved August 6, 2009, from http://minnetesol.org/journal/vol25_html_pages/26_Reimer.htm

Reis, A., & Castro-Caldas, A. (1997). Illiteracy: A cause for biased cognitive development. *Journal of International Neuropsychological Society, 3,* 444–450.

Reis, A., Faísca, L., Ingvar, M., & Petersson, K. M. (2006). Color makes a difference: Two-dimensional object naming in literate and illiterate subjects. *Brain and Cognition, 60*(1), 49–54.

Reis, A., Faísca, L., Mendonça, S., Ingvar, M., & Petersson, K. M. (2007). Semantic interference on a phonological task in illiterate subjects. *Scandinavian Journal of Psychology, 48,* 69–74.

Reis, A., Guerreiro, M., & Castro-Caldas, A. (1994). Influence of educational level of non brain-damaged subjects on visual naming capacities. *Journal of Clinical and Experimental Neuropsychology, 16*(6), 939–942.

Reis, A., Guerreiro, M., & Petersson, K. M. (2003). A sociodemographic and neuropsychological characterization of an illiterate population. *Applied Neuropsychology, 10*(4), 191–204.

Reis, A., Petersson, K. M., Castro-Caldas, A., & Ingvar, M. (2001). Formal schooling influences two- but not three-dimensional naming skills. *Brain and Cognition, 47,* 397–411.

Robson, B. (1983). Hmong literacy, formal education, and their effects on performance in an ESL class. In B. T. Downing & D. Olney (Eds.), *The Hmong in the west: Observations and reports* (pp. 201–225). Minneapolis: University of Minnesota.

Rosselli, M., Ardila, A., & Rosas, P. (1990). Neuropsychological assessment in illiterates. II. Language and praxic abilities. *Brain and Cognition, 12*(2), 281–296.

Royer, J. M., Abadzi, H., & Kinda, J. (2004). The impact of phonological-awareness and rapid-reading training on the reading skills of adolescent and adult neoliterates. *International Review of Education, 50*(1), 53–71.

Sarroub, L. K. (2005). *All American Yemeni girls: Being Muslim in a public school.* Philadelphia: University of Pennsylvania Press.

Sarroub, L. K. (2008). Living "glocally" with literacy success in the Midwest. *Theory into Practice, 47,* 59–66.

Schaetzel, K., Peyton, J. K., & Burt. M., Center for Applied Linguistics. (2007). *Professional development for adult ESL practitioners: Building capacity.* Retrieved July 1, 2010, from http://www.cal.org/caela/esl_resources/briefs/profdev.html.

Schwarz, R. (2005, November). Taking a closer look at struggling ESOL learners. *Focus on Basics, 8*(A). Available at http://www.ncsall.net/?id=994

Scribner, S., & Cole, M. (1978). Literacy without schooling: Testing for intellectual effects. *Harvard Educational Review, 48*(4), 448–461.

Shank, C. (1986). *Approaching the needs of adult illiterate ESL students* (Unpublished master's thesis). Georgetown University, Washington, DC.

Skilton-Sylvester, E. (2002). Should I stay or should I go? Investigating Cambodian women's participation and investment in adult ESL programs. *Adult Education Quarterly, 53*(1), 9–26.

Skilton-Sylvester, E., & Carlo, M. (1998). *"I want to learn English": Examining the goals and motivations of adult ESL learners in three Philadelphia learning sites* (Report No. TR9808). Philadelphia: University of Pennsylvania, National Center on Adult Literacy.

Snow, C. (2006). Cross-cutting themes and future research directions. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (pp. 631–651). Mahwah, NJ: Lawrence Erlbaum.

Solorzano, R. (1994). *Instruction and assessment for limited English-proficient adult learners* (TR94-06). Philadelphia: University of Pennsylvania, National Center on Adult Literacy.

Southwestern Cooperative Educational Lab. (1969). *A total system approach attacking the educational problems of the illiterate Spanish surnamed adults: Final Report* (ERIC Document Reproduction Service ED 660 405). Albuquerque, NM: Author.

Sparks, R. L., Patton, J., Ganschow, L., Humbach, N., & Javorsky, J. (2006). Native language predictors of foreign language proficiency and foreign language aptitude. *Annals of Dyslexia, 56*(1), 129–160.

Street, B. V. (1997). Family literacy and the politics of literacy. In D. Taylor (Ed.), *Many families, many literacies: An international declaration of principles* (pp. 207–211). Portsmouth, NH: Heinemann.

Tarone, E., & Bigelow, M. (2007). Alphabetic print literacy and processing of oral corrective feedback in the L2. In A. Mackey (Ed.), *Interaction and second language acquisition* (pp. 101–121). Oxford, UK: Oxford University Press.

Tarone, E., Bigelow, M., & Hansen, K. (2009). *Literacy and second language oracy*. Oxford, UK: Oxford University Press.

Tarone, E., Swierzbin, B., & Bigelow, M. (2006). The impact of literacy level on features of interlanguage in oral narratives. *Rivista di Psicolinguistica Applicata, 6*(3).

Trupke-Bastidas, J., & Poulos, A. (2008). **Improving lit**eracy of L1-non-literate and L1-literate adult English as a second language learners. *Minne/WITESOL Journal, 25.* Retrieved, July 1 2010, from http://www.minnewitesol-journal.org/.

Valenzuela, A. (1999). *Subtractive schooling: U.S.-Mexican youth and the politics of caring*. Albany: State University of New York Press, Albany.

van de Craats, I., Kurvers, J., & Young-Scholten, M. (2006b). Research on low-educated second language and literacy acquisition. In I. van de Craats, J. Kurvers, & M. Young-Scholten (Eds.), *Low-educated adult second language and literacy acquisition: Proceedings of the inaugural symposium* (pp. 7–24). Utrecht, The Netherlands: LOT.

van der Elst, W., van Boxtel, M. P., van Breukelen, G. J., & Jolles, J. (2006). Normative data for the animal, profession and letter M naming verbal fluency tests for Dutch speaking participants and the effects of age, education, and sex. *Journal of the International Neuropsychological Society, 12*(1), 80–89.

Vinogradov, P. (2008). "Maestra! The letters speak." Adult ESL students learning to read for the first time. *Minne/WITESOL, 25.*

Vinogradov, P. (May 2009). *Principled preparation for teachers of adult low-literate learners*. Paper presented at the Sixth International Language Teacher Education Conference, Washington, DC.

Wagner, R. K., Francis, D. J., & Morris, R. D. (2005). Identifying English language learners with learning disabilities: Key challenges and possible approaches. *Learning Disabilities Research and Practice, 20*(1), 6–15.

Whiteside, A. (2008). Who is "You"? ESL literacy, written text and troubles with deixis in imagined spaces. In M. Young-Scholten (Ed.), *Low-educated adult second language and literacy acquisition: Proceedings of the third annual forum* (pp. 99–109). New Castle-upon-Tyne, England: Newcastle University.

Wiley, T. (1993). Discussion of Klassen and Burnaby and McKay and Weinstein-Shr: Beyond assimilationist literacy policies and practices. *TESOL Quarterly 27*(3), 421–430.

Williams, A., & Chapman, L. (2008). Meeting diverse needs; content-based language teaching and settlement needs for low literacy adult ESL immigrants. In M. Young-Scholten, (Ed.), *Low-educated adult second language and literacy acquisition: Proceedings of the third annual forum* (pp. 49–60). New Castle-upon-Tyne, England: Newcastle University.

Wrigley, H. S. (1993). One size does not fit all: Educational perspectives and program practices in the U.S. *TESOL Quarterly, 27*(3), 449–466.

Wrigley, H. S., & Guth, G. J. A. (1992). Bringing literacy to life: Issues and options in adult ESL literacy (EDRS No. ED 348 896). San Mateo, CA: Aguirre International.

Yamada, J. (2004). **Implications of articulatory awareness in learning literacy in English as a second language.** *Dyslexia, 10*(2), 95–104.

Young-Scholten, M., & Strom, N. (2006). First-time L2 readers: Is there a critical period? In I. van de Craats, J. Kurvers, & M. Young-Scholten (Eds.), *Low-educated adult second language and literacy acquisition: Proceedings of the inaugural symposium* (pp. 45–68). Utrecht, The Netherlands: LOT.

Ziegler, J. C., & Goswami, U. (2005). Reading acquisition, developmental dyslexia and skilled reading across languages: A pyscholinguistic grain size theory. *Psychological Bulletin, 131*(1), 3–29.

Notes

[1] Indexes used included Educational Resources Information Center (ERIC), Education Full-Text, and Linguistics and Language Behavior Abstracts, using keywords such as *illiterate, literacy, reading, writing, phonemic/phonological awareness, adult, adolescent, ESL, English language learners, second language, foreign language, underschooled,* and *limited/interrupted formal schooling.* We explored promising references in relevant articles and browsed specific journals such as *Adult Basic Education, TESOL Quarterly, Cognition, Scientific Studies of Reading, Journal of Literacy Research, Journal of Educational Psychology*, and *LESLLA Proceedings* for studies on this population that did not contain our keywords. We searched for books using our library search options. We selected research to cite based on its relevance to this adult population and the quality of both the research and the publication in which it appeared. We also attempted to balance evidence-based research with knowledge that comes from practitioners so that the paper will be useful to a wide range of audiences (Dirkx, 2006).