

Low-Educated Second Language and Literacy Acquisition

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FOREWORD

In 2005, August 25-27, an inaugural workshop was held at Tilburg University in the Netherlands under the acronym of LESLLA: Low-Educated Second Language and Literacy Acquisition. The workshop focused on multiple Ls, as explained in the introductory chapter of this book. The primary goal of the workshop was to establish an international forum on research and classroom issues pertaining to the second language acquisition and literacy development of adults with little or no native language schooling. Such an enterprise only can succeed on the basis of a common, international interest in acquisition research, in adult literacy development, and in conducting basic research in classroom settings.

The presentations given during the workshop provided compelling reasons for setting up a broader international forum. The contributions to this book provide persuasive evidence in written form, as one may expect from research meetings. Another important outcome was that other persons were willing to organize the next forum. In 2006 the Literacy Institute at Virginia Commonwealth University in Richmond will host in November a four-day forum with presentations by well-known international researchers, authors, linguists, and practitioners. LESLLA appears to have a future. The LESLLA group meanwhile has an official website as well: www.leslla.org. The website makes a clear statement about what LESLLA is and about its goal:

Low-Educated Second Language and Literacy Acquisition (LESLLA) for Adults is an international forum of researchers who share an interest in research on the development of second language skills by adult immigrants with little or no schooling prior to resettling in the country of entry.

The goal of LESLLA is to share empirical research findings and information to guide further research on second language acquisition for the low-educated adult immigrant population worldwide. This research in turn will provide guidance to education policy development in all those countries in which immigrants settle and most need educational support.

The introductory chapter of this book refers to the report of UNESCO 2004 to state the urgency of the problem of literacy. Statistics show that more than 800 million adult individuals worldwide are not literate, and two-thirds are women. Furthermore, it is well-known that poor language proficiency and low literacy levels in L1 and/or L2 have a strong effect on the proficiency levels attained in later generations. Oral and written proficiency levels not only show a skewed distribution worldwide across countries, but modern societies also face large differences between in-groups. Large scale processes of displacement and migration imply that no country can any longer deny the problem of low-educated adults, adult second language acquisition and low literacy levels. It is no longer an external problem, for no one, wherever (s)he lives.

We need bottom-up research in language acquisition and literacy development. University students are equipped and motivated learners of second languages, but they are trained to learn, using all written knowledge sources available, including digital resources and tools. We can not generalize research results obtained from them to groups that have very low levels of schooling or have no schooling at all. LESLLA has the potential to unite international forces for expanding fundamental and practical research.

Roeland van Hout

Representing the Board of Humanities of the Dutch National Science Foundation

RESEARCH ON LOW-EDUCATED SECOND LANGUAGE AND LITERACY ACQUISITION

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1 *The Multiple Ls of LESLLA*

For more than half a century, every adult in post-industrialized societies has been assumed to have had ten or so years of schooling. In these countries “many of the characteristic features of reading are so familiar and seem so natural that they have become invisible” (Chartier, 2004:493). What we take for granted is the impetus for research on the second language (L2) acquisition and reading development of adults with little or no formal education in their native or any other language.

Starting in the seventies and eighties of the last century, several groups of so-called newcomers in western societies have challenged the concept of the ‘naturalness’ of universal education. Statistics on migrants and refugees in several European countries reveal that a substantial percentage from Morocco, Turkey, Iraq, Iran, Afghanistan, some Asian and Southeast Asian countries (e.g. Sri Lanka, Vietnam, Thailand, Cambodia, Laos) and Sub-Saharan Africa are on average low educated, and statistics reveal that numbers for women (in most groups the main caretakers of young children) are even much higher than for men (UNESCO, 2004).

It is well known that poor oral and written proficiency in the L2 lead to social exclusion (Bynner, 2001; Dalglish, 1982). Based on self-reported L2 proficiency data, Dustmann & Van Soest conclude that the ability of immigrants “to communicate with members of their adopted country is probably the most important single alterable factor contributing to their social and economic integration” (2002:473, see also Dustmann & Fabbri, 2003). Parents’ education as well as language proficiency - particularly mothers’ - is found to be crucial to the educational support of their children. Seen from a wider perspective, literacy level is closely related to the economic productivity of that country (Coloumbe *et al.*, 2004).

This volume, and indeed the newly established research forum whose first meeting this book is based on, focuses on adults, where their development of literacy in an L2 takes centre stage. There are numerous reasons for focusing on adult immigrants, but we limit ourselves to only three here. First, immigrants who arrive at younger ages routinely receive education and engage in beneficial social interactions that are crucial to language acquisition, whereas those who arrive later often lack such opportunities (Stevens, 1999). (See Moyer (2004) on the relationship between opportunity for input

and ultimate attainment, particularly with respect to phonology.) The second reason is that researchers have devoted considerably more attention to the language acquisition and literacy development of school-age and adolescent immigrants (see e.g. Genesee *et al.* (2006) for an up-to-date overview). Third, while researchers have paid a good amount of attention to adult L2 reading (including on learning to read in a new script, e.g. Koda (1999), this has almost exclusively involved the population of educated students (e.g., Zamel & Spack, 2004). In contrast to both this body of research and the vast body of research on first language reading and dyslexia, there is next to nothing on the linguistic and cognitive processes underlying reading development by adults with little or no schooling.

This book thus focuses on adult L2 learners who have hardly any or no history of formal education, who are non-literate or low-literate, and who are faced with the task of acquiring oral second language skills and reading and writing abilities. They have to acquire these in the highly literate societies in which immigrants and refugees resettle including the USA, Canada, Australia, New Zealand and nowadays most European countries. These adults are expected to participate in communities in which the use of both oral and written second language belong to the daily routines of every resident. This makes the 21st century in these countries quite different from, for example, the 18th century (or any period before compulsory education) or from many rural areas in modern-day Africa: both frames of time and space in which non-literate adults could and can easily participate in the literate community without being able to use the written medium themselves (Koch, 1997; Wagner, 1999) and, in addition, where the possibilities of earning a living are much less dependent on literacy skills.

1.1 *Low Educated, Low Literate or Non-Literate Second Language Learners*

In many post-industrialized countries, the educational level of many adult immigrants and refugees lags behind the average of the host country. In European countries for example, while only 10-15% of native-born adult residents have an educational level of at most primary school, more than half of the adult immigrants from for example countries such as Turkey, Morocco, Afghanistan and Somalia have an educational level of primary school or less (around 50-60% for men and 70-80% for women). Illustrative of this bias is the fact that 'at most primary education' is the lowest level demographic statistics include. For many immigrants from Morocco, especially for women, this educational level in the statistics can easily be interpreted as 'no education at all' or 'just a few years'. Teachers in adult education do know, however, about the striking differences between not only high- and low-educated second language learners, but also between those who attended school for about four years and those who have never been to school (Kurvers & van der Zouw, 1990; Kurvers, 2002; Tarone & Bigelow, 2005).

In this volume we use the following denominators and descriptions:

Non-literate (or: illiterate): an adult who never went to school and cannot read and write, neither in his/her first language, the standard language of the country of origin or the second language.

Low-literate: an adult who has attended school, but who has a reading level below the average primary school level.

Low-educated: an adult who has at most ten years of education in the country of origin. For many adult immigrants and refugees, this means at most primary education.

Scrolling through scientific journals about the acquisition, learning and teaching of second language skills, such as *Second Language Research*, *Studies in Second Language Acquisition*, *Tesol Quarterly*, it is easy to conclude that much more research has been carried out on highly-educated (more than ten years, by the definition above) second language learners than on low-educated or non-literate adults, as noted above. A substantial body of work on adult second language acquisition (SLA) does indeed exist, but most studies either involve adults with at least ten years of education in their country of origin or do not isolate level of native language education as a variable. Only a fraction of current research concerns the literacy development of these vulnerable adult L2 learners. Since initial interest in the 1980s there has been silence in this research domain, apart from a few studies in European countries, in the Netherlands (Kurvers & Van der Zouw, 1990; Kurvers, 2002), in the USA (Young-Scholten, 2004; Condelli *et al.*, 2003; Tarone & Bigelow, 2005) and in Sweden (Lindberg, 2002; 2003). Studies of adults' development of basic reading skills have either focused on educational practices or have involved adults who failed to learn to read and write in their native language despite schooling.

Previous studies of immigrants, such as the European Science Foundation's 1980s study of adults from six different language backgrounds in five European countries (see Perdue, 1993), have left unaddressed educational context and variation in cognitive skills. We do not know whether when we isolate literacy as a factor, we will find that literacy has a greater impact on the development of linguistic competence than generative linguists assume.

What, for example, does it mean for a second language learner, if he or she is not aware of the architecture of language? We do not know if the stages L2 learners go through are similar to how educated adults learn a second language. Based on studies of adults dating back to Bailey, Madden & Krashen (1974) and as recent as Vainikka & Young-Scholten (1994; 1996), Hawkins (2001) concludes that L2 learners follow a predictable route of grammatical development largely independent of age at initial exposure, native language, type of exposure or educational background. But until literacy is examined as a variable, we cannot be absolutely sure of this.

Nor do we know much about the reading development of these second language learners. This gap in knowledge and empirical research is unfortunate, since post-industrialized societies have to deal with immigrant adults who are trying to gain literacy for the first time in their lives in order to participate fully in life and work in their new communities.

In addition to a bias towards the higher-educated, there also seems to be an English language bias. Many models of second language acquisition and reading development have been more or less developed with the English language in mind and many studies on adult literacy focus on the roman alphabet and on English (Wagner *et al.*, 1999). As the growing body on cross-linguistic research on monolingual children learning to read already shows (Nunes *et al.*, 2004), research on low-literate adults learning to read in a range of second languages is urgently needed to paint a complete picture.

1.2 Linguistics and Second Language Acquisition

As noted above, the learning processes of adult second language (L2) learners with a low level of education are usually not explicitly distinguished from those of higher-

educated L2 learners. Most L2 acquisition research has been carried out on university students or learners with at least an intermediate or high level of compulsory education who are learning or have learned a new language. It is starting to become apparent that there is a gap in the research since there are increasing signs pointing to important differences between these two groups of learners. Low-educated learners have, for instance, more troubles in attaining a reasonable level of oral proficiency in L2 classes, their learning process is much slower and they seem to run the risk of fossilizing at an earlier stage of development. This may, however, be true of low socio-economic immigrants in general; see e.g. Klein & Perdue (1997), who conclude that many of the learners studied in the ESF project (see below) remained at the earliest attested stage of development. Slow progress can be inferred from articles in newspapers, reports on the results of standardized exams, proficiency tests and assessments by teachers (e.g., for the Netherlands, Emmelot *et al.*, (2002)). Thus not only for theoretical and educational reasons but also for political reasons is research specifically directed to the low-educated learner at issue. But – as we have pointed out above - it is certainly not the case that low-educated learners are unrepresented in the L2 research literature, as can be observed in a quick tour on the main linguistic determinants of L2 learning by low-schooled adults.

Since the 1970s when Chomsky's mentalist ideas on an innate language learning mechanism began to spread, the driving question for L2 acquisition researchers became whether adult L2 learners are using the same innate mechanisms as generative linguists assume to drive first (and second) language acquisition for children. This *Identity* or *Creative Construction Hypothesis* assumes that L2 learners actively organize the target language they hear, and make deductions about the structure of the language they are acquiring in the same way as children learning their mother tongue. The course of the acquisition process is determined by the structural properties of the target language and of the innate language learning system, not simply by the differences and similarities between the source and the target language, as was assumed when the *Contrastive Analysis Hypothesis* (Weinreich, 1953; Lado, 1957) was dominant. Evidence for the claim that L1 and L2 acquisition are fundamentally similar was initially based on large-scale cross-sectional studies, which pointed to a common route of development across learners from various L1 backgrounds. Studies of the acquisition of English by Brown (1973) and De Villiers & De Villiers (1973) on the L1 acquisition of grammatical morphemes such as plural *-s*, progressive *-ing*, and copular *be*, by Dulay & Burt (1974a, b) on child L2 acquisition, and by Bailey *et al.* (1974) on adult L2 acquisition showed a significant correspondence in the accuracy orders of these morphemes (controversy notwithstanding; see e.g. White (1996) on the status of inflectional morphology).

More or less by accident, low-educated language learners became involved in L2 research. In the well-known studies on immigrants from the 1970s and 1980s, a longitudinal methodology was used, as in the studies on L1 children (e.g. Brown, 1973), and naturalistic L2 learners - those who had received no instruction in the L2 - were used because the aim of the study was to observe to what extent adults were able to acquire language like children do, solely on the basis of aural input. For theoretical and practical reasons, adults with no other linguistic knowledge than that of their mother tongue were the best subjects for such research, so low-educated immigrants to countries in northern Europe, the USA and Australia were studied. Table 1 presents the details of three major longitudinal group studies.

Table 1: Longitudinal studies of immigrant adults

study	L1 and L2	subjects	type of study
Cancino <i>et al.</i> (1978)	L1 Spanish	2 children	10 months
	L2 English	2 adolescents	longitudinal
ZISA Clahsen <i>et al.</i> (1983)	L1 Spanish, Portuguese, Italian	2 adults	cross-sectional
	L2 German	45 adults	+
ESF Klein & Perdue (1992)	six L1s	12 adults	2 years
	five European L2s	40 adults	longitudinal
			2 ½ years
			longitudinal

In addition to the ZISA (Zweitspracherwerb Italienischer (Portugiesischer) und Spanischer Arbeiter) project in Germany, the ESF (European Science Foundation) project in Europe, and Cancino *et al.*'s study in the USA, there have been additional cross-sectional studies of immigrant adults, e.g., the Heidelberger Forschungsprojekt (Klein & Dittmar, 1979) and the Lexlern Project (Clahsen *et al.*, 1991), both in Germany. In these studies, Romance languages formed the L1 background except for the ESF project in which six different L1's were involved (also non-European L1's as Punjabi, Turkish and Moroccan Arabic) and five Western European L2's, and the Lexlern project with Korean and Turkish learners of German. In all these projects L2 acquisition was studied on the basis of oral production, as spoken language is seen as the essential manifestation of language.¹ The participants in these research projects were usually literate in their L1, though some of them had a very limited education of only several years primary school. Their level of literacy and their familiarity with script and a literate culture were never an issue in the studies (but see footnote), nor a factor considered in L2 learning. Besides, this focus on 'naturalistic' second language learners implicated a lack of research on deliberate second language learning and teaching in the context of adult education to this specific group of learners.

In the last two decades, there have been two main issues in (generative-oriented) L2 acquisition research. The first issue relates to the access to Universal Grammar (UG) or the question whether an adult learner can acquire new grammatical structure or categories or reset parameters in a second language. The observation that native-like attainment in an L2 is exceptional after a certain age (e.g. puberty) gave rise to the idea of a critical period for language learning (Lenneberg, 1967). This is understood by some researchers (e.g., Bley-Vroman, 1990) to mean that UG is no longer accessible to adults. In their view adults (must) learn a language by means of cognitive strategies and corrective feedback. Naturalistic L2 adults, especially those with a low education and few meta-cognitive strategies or metalinguistic skills are of great interest to advocates of

¹ With generative SLA researchers' aim being to determine the representation of the L2 learner's linguistic competence in his/her mind, tasks tapping implicit knowledge such as grammaticality judgment tasks or comprehension tasks are preferred over oral production data. Low-educated learners turn out to have difficulties in understanding the demands of such tasks, as Vainikka and Young-Scholten discovered when working on the Lexlern project (see, e.g., Vainikka & Young-Scholten, 1994)

both the access-to-UG and the no-access-to-UG approach: do learners show evidence of new categories and structure or parameter resettings? There are some examples of L2 learners' interlanguage systems which are neither that of the L1 nor the L2 (e.g., Schwartz & Sprouse (1996) for the distribution of full NP vs. pronominal subjects by a Turkish learner of German). Such interlanguage rules are interesting for acquisition researchers, and it is for this reason that low-educated learners have ended up being the target of acquisition studies. Similar research with non-literates does not exist, as far as we know.

The second issue, since the 1990s, relates to the L2-initial state or to the question what exactly is the linguistic knowledge of an L2 learner who starts the task of learning a new language. An L2 learner does not start as a *tabula rasa*. At the very start of L2 acquisition, at the so-called 'initial state' s/he has knowledge of a fully fledged language, used for many years and fully automated. Acquisition researchers differ in their views on the extent to which the learner makes use of this and other sources of knowledge. Roughly speaking, there are four positions. The non-UG position (e.g. Bley-Vroman, 1990; Clahsen & Muysken, 1986) states that the L2-initial state involves the learner's L1 and general cognitive mechanisms. Under this view, development is not directly driven by the same mechanisms children use. L2 learners use a canonical 'SVO' word order strategy (e.g., Clahsen & Muysken, 1986), and they are guided by general cognitive mechanisms (mainly semantic-pragmatic principles, see Perdue (1993) and Klein & Perdue (1997)). There are three access to UG positions. One assumes that an L2 learner builds up the L2 grammar like the L1 and that transfer plays no role (e.g., Epstein, Flynn & Martohardjono, 1998). The Full Transfer/Full Access position assumes that the learner's entire L1 grammar is available at the L2-initial state, and that development involves the acquisition of L2 morphology and syntactic adjustments within the constraints of UG (e.g., Schwartz & Sprouse, 1996; White, 1996). The Partial Transfer/Full Access to UG position holds that only a minimal grammar ('minimal tree') based on the properties of the L1 is available at the initial state as there is no inflectional morphology, no complex syntax, only syntactic elements in their 'base' position. Under this view, first and second language acquisition are similar in that learners build up structure after an initial transfer stage (e.g., Vainikka & Young-Scholten, 1996; see also Hawkins, 2001).

Besides the evidence of access to UG provided by the learner's production data in the large corpora mentioned above, additional evidence for UG access typically comes from educated, metalinguistically skilled L2 learners. These learners are asked to give grammaticality judgments about ungrammatical vs. grammatical sentences, the former which they would not have heard in the input. This technique tests whether adult learners are sensitive to constraints of UG which do not apply in their L1. However, low-educated learners normally lack the metalinguistic skills to make such judgments. They resemble the non-literates or illiterates in Kurvers' contribution to this volume, who have troubles distinguishing the real world (the referents) from the linguistic reality (the words themselves). Low-educated learners are not used (or rather: not trained) to reflect on grammatical features and therefore, they do not give judgments about the grammaticality of a sentence but, for instance, either about the semantic content of a sentence, e.g. its truth value, or about the social acceptability of that given sentence.

While studies of both educated learners and less educated, immigrant learners such as the ZISA study and the ESF study have investigated the development of morphosyntax and have inadvertently provided a wealth of findings about low-educated adult L2 learners, they have also left unaddressed a range of issues that tend not to be addressed in the wider SLA research community.

1.3 Literacy Acquisition in a Second Language

As we noted at the start of this chapter, learning to read and write is considered one of the most critical factors in success in school and later in life. It turns out to be one of the best predictors of competent functioning and active participation in literate societies. For more than half a century, a massive body of research has been addressing how young children gain access to the written code, revolving mainly around literacy acquisition in the roman alphabet, while hardly any research exists on adults who learn to read and write for the first time in their life. Many researchers have addressed the issue of stages in reading development starting from the stage of emergent literacy (before formal education starts) to the stage where the reader reads fluently and can apply his/her reading and writing abilities in a flexible way to meet the requirements of a literate society (Juel, 1991; Ehri, 1994; Chall, 1999).

Starting in the seventies, two branches of research have been very fruitful in gaining insight into the first, emergent literacy stage. These are studies on print awareness, i.e. the concepts young children construct about print and writing (Tolchinsky, 2004), and studies on the awareness of structural units of spoken language, such as words, syllables, phonemes (Morais & Kolinsky, 2004). The importance of these studies of pre-reading children in relation to processes of reading and writing cannot be overestimated (Adams, 1990; Tolchinsky, 2004). The emergent print awareness of young children can be summarized as a gradual development in thinking about writing as a pictographic system, in which signs share visual features with the referent, to writing as an ideographic system (in which signs are conventional, but represent an idea or concept) to, finally, writing as an grapho-phonological system, in which signs represent speech units. In other words, children gradually learn to understand that writing represents speech, and they then gradually become familiar with the specific features of the written register (Ferreiro, 1985; Masonheimer *et al.*, 1984; Ehri, 1987; Sulzby & Teale, 1991; Tolchinsky, 2004).

Learning to read and write can also be considered a metalinguistic activity in that it turns out to be nearly impossible to learn to read and write if the child does not become aware of “some aspects of the speech structure” (Morais & Kolinsky, 2004: 601). The term language awareness or metalinguistic awareness is used to cover a range of skills at the phonological, lexical, syntactic and textual level, such as segmenting words into syllables or phonemes, phoneme manipulation, segmenting sentences into words, separating words from their referents or judging syntactic properties of sentences (see Gombert 1992). Phonological awareness in the general sense refers to the ability to perceive and manipulate the sounds of spoken words (Byrne, 1998; Castles & Coltheart, 2004) and encompasses awareness of sub-lexical units such as onset-rhyme, syllables, or phonemes. Lexical/semantic awareness refers to the ability to separate language forms from their meanings and to segment sentences along word boundaries. Research on metalinguistic skills of adults is reviewed in Kurvers *et al.*, this volume.

Concerning learning to read in an alphabetic script, there is a long history of debate (more in English speaking countries than in continental Europe) on models of reading development, the main topic being the differences between the non-stage models (Goodman & Goodman, 1986; Artwergen *et al.*, 1987; Smith, 1996) and the stage-models (Ehri & Wilce, 1985; Juel, 1991; Chall, 1999). Non-stage models consider learning to read and write an alphabetic script as essentially the same process from the very beginning, while the stage models consider learning to read and write as a developmental process that consists of qualitatively different stages that children have to pass through to become fluent readers. The stage models describe the learning process as (roughly summarized) a three-stage process: from a direct word recognition stage, through a stage of indirect word recognition, to a third stage in which written words are recognized directly again, but now through automation of the slow indirect way. The first stage is called the logographic stage, in which children treat written words as whole units to be learned by heart, without being aware of their internal structure (direct word recognition); the second stage is called the alphabetic stage, in which written words are recognized by sounding out letter by letter and blending the sounds (indirect word recognition); the third stage is called the orthographic stage, in which children have learned to automatize the slow way of blending individual sounds: this is direct word recognition again, but now the readers have build up a repertoire of written word images and are able to apply the alphabetic rules without even noticing they do. This advanced stage of direct word recognition expands to longer and less frequent words and becomes more and more consolidated by practising reading (for reviews of models and debate, see Adams, 1990; Juel, 1991; Smith, 1996).

In research on young children, literacy acquisition in a second language has been a central issue from the time immigrant children began to enter education in greater numbers in post-industrialized societies. Many evaluations of reading development in a second language reveal that non-native children lag behind native children in their reading skills (Moss & Puma, 1995; Verhoeven, 2004). And although many children reach average scores on decoding skills, the reading comprehension scores of many immigrant children are on average one to two grades below those of native children (Verhoeven, 2004). Literacy acquisition in a second language, especially for all those who did not learn to read and write before immigration, turns out to be a very complicated process - although worldwide there may be even more people who learn to read and write in a second language than in their native language (Wagner *et al.*, 1999).

The experiences of children with different registers of spoken and written language in their home cultures are critical to the development of reading and writing (Snow, 1992). Cognitive development and academic development in the first language have been found to have positive effects on second-language literacy acquisition (Bialystok, 1991; Genesee, 1994). Although research supports the idea that native language use is advantageous in second-language literacy acquisition (e.g. August & Hakuta, 1997), in many countries bilingual literacy programs are not frequently implemented. Meta-phonological skills and letter knowledge turn out to be main determinants of decoding skills. In addition to these general skills that hold for every beginning reader, vocabulary is a primary determinant of decoding and reading comprehension for second-language readers (Verhoeven, 2004). From second or third grade on (seven and eight years of age), not only does vocabulary turn out to play a decisive role in reading comprehension, but so do syntax and discourse markers in the second language. So, in many studies of children learning to read in a second language,

the most important predictors for decoding turn out to be metaphonological skills, letter knowledge and vocabulary, while for the later stages of comprehension, vocabulary and syntactic knowledge become more important.

Compared to what is known about young children's acquisition of reading and writing in a second language, very little is known about non-literate adults who learn to read and write in a second language. Most studies on literacy acquisition of adults either focused on 'illiterate' adults in industrialized western societies who did attend school but for some reason did not learn to read properly (Hunter & Harman, 1979; Read, 1988; Scholes, 1993; Worthy & Viise, 1996; Greenberg et al. 2002; Viise, 2005) or the acquisition of literacy in developing countries (Wagner et al., 1999).

An early exception to this trend is Kurvers & Van der Zouw (1990), who investigated the reading development during the first year of two groups of adult migrants who had never attended school before and who had started their literacy acquisition in Dutch as a second language. One group attended non-intensive courses for about four to five hours a week, while the other group attended a semi-intensive course for fifteen hours a week. The 48 learners, most of whom were women, came from four different countries (Morocco, Turkey, Somalia and Surinam) and differed in length of stay in the Netherlands. The study revealed that attending an intensive course of about fifteen hours a week, led to much greater success in decoding skills than attending just for four hours a week (the groups were compared keeping the number of hours of instruction equal). In addition, learners in courses that primarily used a sight method of reading instruction did not learn to decode at all, while most learners in a phonics-based course did. One of the interesting findings was that in the process of learning word recognition skills in a second language the adults went more or less through the same stages that have been observed for young children (Chall, 1990; Juel, 1991): a logographic stage in which they learned some sight words, based on visual or contextual cues, an alphabetic stage, in which they learned to recognize words indirectly by using grapheme-phoneme conversion rules, and an orthographic stage in which they gradually managed to recognize frequently used words directly, by automating the slow blending of the alphabetic stage.

During the first year of the literacy course, more than half of the adult learners in the non-intensive course managed to decode orthographically simple and well-known words, while only one learner succeeded in reading and comprehending a longer passage of text. Phonological skills and vocabulary in the second language were the main influencing factors during the first stage. Except for a few individuals, the process seemed to be much slower than what appears to be the case for young children learning to read in a second language, although a comparison is difficult without taking into account many other factors such as input and teacher qualifications.

1.4 Overview

As we have pointed out above, the existing body of research on low-educated adults leaves unaddressed a range of issues whose resolution has the potential to directly impact educational policy in all those countries in which such second language learners exist. As a start, these include variation in source, amount and intensity of input (aural extra-classroom input, aural classroom input and written input), variation in instructional method/technique and variation in cognitive ability relating to aspects of language aptitude including working memory. In this volume of proceedings of the first

LESLLA workshop a modest number of contributions have been brought together which relate to two focal issues put forward in August 2005: literacy and second language acquisition by adults and the cognitive abilities involved.

Astrid Geudens gives an overview of research on beginning child L1 readers, Martha Young-Scholten, Nancy Strom and Jeanne Kurvers deal with adult beginning L2 readers, while Alan Juffs focuses on working memory and L2 learning. Two contributions from Larry Condelli, Heide Wrigley and Nancy Faux relate to teaching practices in the U.S.A, while the contributions from Anne-Mieke Jansen and Willemijn Stockmann provide the European perspective.

Astrid Geudens deals with phonological awareness and its importance for learning to read and write. In discussing various tasks developed for assessing phonological awareness at children, she addresses some of the problems and questions that arise in this research. One controversial issue relates to the developmental sequence of phonological awareness from large to small units or vice versa; another is the debate about which phonological units are most salient and important in children's reading development. A final intriguing question she asks is whether beginning readers use the same kind of phonological knowledge as skilled readers and whether late readers use different reading strategies than normal developing readers. She draws attention to developmental differences in children's early phoneme isolation skills in relation to early stages of reading. This research emphasizes the importance of informal print-related experiences, phonetic factors such as perception and articulation, and instruction-based experiences.

Martha Young-Scholten and *Nancy Strom* ask whether there is a critical period for learning to read, in other words, can adults without any native language schooling learn to read for the first time in a second language? While children develop literacy only after they have acquired much of their first language, non-literate adults often face the challenge of learning to read in a second language with little proficiency in that language and no familiarity with literacy. Young-Scholten and Strom report on a small-scale study of Vietnamese- and Somali-speaking adults with some or no native language schooling who were learning English in the USA. The study proceeded on the premise that awareness of various linguistic units - from word to phoneme - is connected to learning to read for the first time (e.g. for children Goswami & Bryant 1990, and for adults in their native language Morais *et al.* 1979). Their study reveals that, when compared to completely unschooled learners, some years of native language primary schooling makes a difference with regard to the learner's success. Two to four years of native-language schooling using the roman alphabet (for Somali and Vietnamese) gives low proficiency learners a foundation for reading in English. Any reading problems these learners had appeared to be connected with overall linguistic development. However, despite ample exposure to written English in their ESL classes, only one of the completely unschooled adults in the study was able to do more than read words from a very limited sight word repertoire or to write his name and address. The correlation of weak reading skills scores with low phonemic awareness scores provides further evidence for these learners' failure to grasp the alphabetic principle and to progress beyond sight-word-based reading. These unschooled non-readers, however, displayed the ability to isolate words and to recognize rhyme and alliteration in both their native language as well as in English. This parallels findings for pre-school children, suggesting that the readiness to read does not diminish for adults.

Jeanne Kurvers, Roeland van Hout and Ton Vallen focus on the language awareness of unschooled illiterate adults (immigrants from different language background as Turkish, Somali, Berber and Moroccan Arabic), which they compare with pre-reading children and low-educated adult readers. All groups were given the same set of tests on language awareness for both the phonological and the lexical/semantic levels. One of the outcomes was that the impact of literacy seems to be of crucial importance when it comes to explicit knowledge of structural features of language, more particularly of linguistic concepts like ‘word’ and smaller parts of words, such as phonemes, but also of what can be written down and what cannot. If, for example, function words are not signaled as writable units by non-literates, this may (or should) have a considerable impact on curricula and teaching, whether it is the teaching of either written or oral skills. *Kurvers et al.*’s study also reveals that non-literate adults have to learn how to distinguish between the information in a written text and real life experiences. In that literacy instruction is what leads to a focus on these within-text relations, such conclusions are highly relevant for classroom practices.

While the role of memory in language learning has been an issue for L2 researchers for about twenty years, it is almost unexplored with regard to non-literate and low-educated L2 learners. It is still an open question whether such learners memory systems are similarly organized as those of literate and higher-educated learners, and how their memory capacity can be measured. There are important indications pointing to a relationship between working memory capacity (in particular, in the working of the phonological loop operationalized by a non-word span) and the ease and rate of learning new vocabulary both in L1 (Gathercole & Baddeley, 1989; Baddeley, 2003) and L2 (Service, 1992; Miyake & Friedman, 1998). The same working memory capacity is assumed to play an important role in learning how to read and write, viz. to build up phonological representations (Bradley & Bryant, 1983; Goswami, 2000). So, for learning how to read and write for the first time in an L2, the role of working memory seems to be even still more important.

In his paper on working memory, L2 acquisition and low-educated L2 learners, *Alan Juffs* gives an overview of different models of working memory and the tests used for its measurement and he discusses the principal research results relating to L2 learning. Juffs concludes that, given research indicating that literacy may in fact change brain architecture, non-word tests may not be useful as a measure of working memory for non-literate populations (Petersson *et al.*, 2000). He therefore calls for extreme caution when making any predications or drawing conclusions about the potential for non-literate and low-educated learners to succeed in acquiring oral proficiency in the L2 on the basis of their non-word spans.

In the paper by *Larry Condelli and Heide Spruck Wrigley* instructional practices are the point of departure and the crucial question is: what works for adult ESOL (English speakers of Other Languages) literacy students? This large-scale study included 495 adult literacy students attending 38 ESOL classes in 13 schools and seven states in the U.S.A. Students were assessed at intake, three months and nine months after enrolling, with reading, writing and speaking tests and a literacy practices interview. Instructional practices, information about which was collected through classroom observations, included emphasis on literacy and language development activities and general instructional strategies. Using correlational growth modeling, the study found that instructional strategies that connected what is taught to real life, used a variety of modalities and activities to keep students engaged and used students’ native languages

to clarify and explain concepts were significantly related to literacy students' development of reading and oral communication skills.

Nancy Faux focuses on another classroom issue, but this time the perspective of the teacher trainer. Many adult teachers in the U.S.A. are untrained in working with the low-literate migrant population and unable to differentiate between literacy instruction for native speakers and that for non-native speakers. Using Virginia as an example, Faux explores some of the issues in the professional development of ESOL literacy teachers and discusses a solution that provides learning opportunities for such teachers to adopt effective research-based methodologies.

The papers by *Anne-Mieke Janssen-van Dieten* and *Willemijn Stockmann* also relate to the organization in and outside the classroom, but this time in the context of a European country, the Netherlands. Janssen-van Dieten first provides information on the European Framework of Reference for Languages, an instrument that aims to achieve more coherence and comparability of language qualifications within the European Community. She argues that this framework is not tailored to the needs of the groups of non-literate and low-educated learners, and then Stockmann in her contribution shows how the European framework has been adapted to and expanded for the LESLLA learners. Stockman describes how portfolio methodology was adopted as a tool of assessment for adult learners in the Netherlands. She tailored the portfolio - as one of the components of the 'European Framework of Reference for Languages' - to the level of LESLLA learners, making it suitable as an instrument of self evaluation and she illustrates in detail how it may also be used to shape the curriculum.

For researchers and practitioners from English-speaking and non-English-speaking settings a new research agenda represents a great opportunity. We need to know much more about the second language acquisition of non-literate and low-educated adults; specifically, we need to know more about the L2 acquisition of adults who learn to read and write for the first time in a second language. We also need to know more about the interactions between learning a second language and developing literacy. This research program can only be pursued cross-linguistically. Research on second language acquisition thus far has been carried out in the context of (applied) linguistics, while literacy research is much more embedded in the social science, e.g. education. Research should also be encouraged in order to address Comings *et al.*'s (2003) call for an evidence-based adult education system. Without more research on such learners' actual linguistic and literacy development, it is difficult to draw any conclusions on how best to teach them. Studies of the language acquisition of this population in relation to their level of and development of literacy will most definitely add to the body of research in second language acquisition. Studying adult immigrants with little education, taking social variables into account (see Bigelow & Tarone, 2004; Moyer, 2004; Pitt, 2005) creates the potential for shedding light on narrowly treated issues in the second language acquisition of syntax and of phonology. Including a different set of variables can lead to fresh perspectives on a range of issues such as the status of inflectional morphology in the development of L2 syntax (Prévost & White, 2000; Van de Craats, to appear) or the role of orthography in the development of L2 phonology (Bassetti, to appear).

An interdisciplinary approach is required to bring together linguists, psycholinguists, psychologists and educational researchers to establish a cross-disciplinary, multi-country and multi-target-language research agenda to address how adult learners

with little or no formal schooling acquire second languages and learn to read in them and how best to teach such learners. The present inaugural symposium proceedings represent the beginning of what we hope will be a fruitful journey as we further the LESLLA research agenda. We hope that the multiple Ls in Low-Educated Second Language Learning and Acquisition will develop into the future Ls of Literate, Empowered, Secure, Life-Long-Learning Adults.

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PHONOLOGICAL AWARENESS AND LEARNING TO READ A FIRST LANGUAGE: CONTROVERSIES AND NEW PERSPECTIVES

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1 *Phonological Awareness, an Important Early Step in Learning to Read*

There is a growing consensus among researchers that basic difficulties in learning to read and spell stem from weaknesses in alphabetic and phonological coding (Adams, 1990; Vellutino, Fletcher, Scanlon, & Snowling, 2004).² For the purposes of learning to read an alphabetic script, the learner has to find a way to translate or decode the letters on the page into sounds, a skill that is referred to as alphabetic coding. This insight into the connection between print and speech obviously requires knowledge of the letter symbols and sensitivity to the organization of letters and written words – *orthographic awareness*, for instance that the script runs from left to right. However, someone who knows the letter <p> but lacks the understanding that this letter both represents the first sound in *pan* and the last sound in *lip*, will still not be able to establish a precise connection between the grapheme and phoneme and vice versa. Research of more than two decades has documented that a crucial phonological skill for the beginning reader is the insight into how spoken words are structured and composed of individual sounds and combinations of sounds, i.e., *phonological awareness*. Orthographic awareness and phonological awareness crucially depend on each other and ultimately work in concert to help the learner break the code of an alphabetic writing system.

The study on phonological awareness is the most thoroughly developed body of research on phonological processing skills (Wagner & Torgeson, 1987). Many researchers have reported that tests of phonological awareness account for relatively large amounts of variance in reading skill even after the effects of age and IQ have been taken into account (see Goswami & Bryant (1990) for a review). Evidence from intervention studies furthermore shows that direct training designed to facilitate phonological awareness in combination with the teaching of grapheme-phoneme correspondences has a beneficial effect on word identification, spelling, and reading ability in general (e.g., Hatcher, Hulme, & Ellis, 1994). In addition, poor readers have consistently been found to perform below the level of normal readers on phonological awareness tasks (Hulme, Snowling, Caravolas, & Carroll, 2005). Difficulties in acquiring phonological awareness and skill in alphabetic coding are believed to be due, in many cases, to weak phonological coding characterized by poor quality of the underlying sub-lexical phonological representations (Griffiths & Snowling, 2002).

However, despite the well-documented link between phonological awareness skills and learning to read, many questions about the nature of this link, the definition of the

² This research was funded by the Fund for Scientific Research (Belgium).

concept phonological awareness and its developmental sequence have remained unclarified. This paper aims to address some of these controversial issues in order to increase insight into the complex relationship between phonological awareness and learning to read. A flexible perspective on phonological awareness development will be proposed in which the importance of language-specific, orthography-specific, but also task-specific and material-specific factors is emphasized (see also Geudens *et al.*, 2005, for further details).

2 *Ambiguity in Defining Phonological Awareness*

A first problem regarding the relationship between phonological awareness and learning to read is that tasks that have been used to assess phonological awareness come in great variety. They differ in terms of the required operation (e.g., blending sounds versus isolating sounds), the degree of consciousness (e.g., recognition versus explicit identification of sound units), the level of representation that needs to be manipulated or is tapped in the task (e.g., the syllable versus phoneme level). Additionally, the stimuli that are presented in the tasks strongly vary in terms of complexity (e.g., CVV versus CCVCCVC items) and phonemic make-up (e.g., stops versus nasal consonants). The tasks themselves involve many sub-tasks each requiring different skills such as listening, holding in memory, performing an operation and communicating the results of this operation. As a consequence of this great variety, many different characterizations of phonological awareness have been offered, making it difficult to integrate the available data within a clearly articulated theoretical framework (see also McBride-Chang, 1995; Morais, 2003).

Some, the most stringent, definitions of phonological awareness solely focus on conscious manipulations of the smallest individual segments, a skill that is for instance required in segmentation tasks in which children have to articulate the sequence of individual sounds (e.g., “Tell me which sounds you hear in *cat*”). The rationale is that graphemes correspond to individual phonemes and that only manipulations of individual segments help the learner to acquire abstract representations of phonemes. Other definitions focus on a capacity to consciously isolate words at multiple linguistic levels, also including larger units than the phoneme. For example, Swank & Larrivee (1998) describe the concept phonological awareness as “the ability to consciously think about and perform mental operations on speech-sound units, such as segmenting, blending, deleting, and changing the order of speech-sound sequences” (p. 264). According to Morais and colleagues (Morais, 1991), a participant who can indicate which two of three words rhyme would not be considered phonologically aware unless he or she could identify the unit that is identical in the two rhyming words (Adrián, Alegria, & Morais, 1995). The reason is that only the latter skill would involve conscious representations of phonological units. On the contrary, still other definitions of phonological awareness include all levels of access to multiple linguistic units. For instance, Goswami & Bryant (1990) argue that “a child who recognizes that two words rhyme and therefore have a sound in common must possess a degree of phonological awareness, even if it is not certain that this child can say exactly what is the sound that these words share” (p. 3).

These different characterizations of phonological awareness, appealing to distinct degrees of complexity, consciousness, and representations clearly make it difficult to

interpret conclusions about phonological awareness skill. Part of the difficulty also lies in the term “awareness”. Because this term is so well entrenched in the literature, numerous researchers refer to good performance on, for instance, rhyme detection or judgment tasks as “onset-rime awareness” (e.g., Goswami *et al.*, 2002:10911), which may be misleading. If one defines “phonological awareness” in more general terms as a capacity to pay attention to spoken utterances, there is no problem in referring to detection and judgment tasks as measures of phonological awareness. However, in that case, one should not ignore that pre-readers’ conscious attention to sounds may not refer to the phonological units that are manipulated in the task but may instead be directed to the acoustic shape of the global utterance (see Geudens, 2003; Geudens, Sandra, & Martensen, 2005). For instance, in order to discriminate the odd word out in the list *top, rail, hop* (from Kirtley, Bryant, MacLean, & Bradley, 1989), most researchers would agree that this involves conscious attention to the “sound” of the words, to the utterances as a whole. However, as the odd word *rail* differs from the other two words in terms of global acoustic properties, it is doubtful whether conscious representations of the non-rhyming and rhyming units are involved (Cardoso-Martins, 1994; Geudens *et al.*, 2005; Jusczyk, Goodman, & Baumann, 1999; Morais, 1991).

In this context of terminological vagueness, some researchers have suggested using the terms “implicit awareness” and “explicit awareness” to distinguish between levels of recognition and levels of identification (see Goswami & East, 2000; Hulme *et al.*, 2002). Yet, this proposal raises problems as well since “awareness” inherently involves “consciousness” whereas the term “implicit” refers to an unconscious level. Researchers such as Stanovich (2000) have asserted that the construct of phonological awareness should be divorced from the idea of consciousness, inherently involved in the term “awareness”. He has suggested using the term “phonological sensitivity” instead as a continuum from a shallow sensitivity of large phonological units to a deep sensitivity of small phonological units. One may compare Stanovich’s notion “phonological sensitivity” with Gombert’s (1992) “epiphonological behaviour”, a functional knowledge of phonological organization that is not accessible to conscious awareness (see pp. 35-36). This general definition includes phonological skills, involving manipulation and judgments of any unit of word structure (Anthony & Lonigan, 2004).

Whichever terminology one chooses, the crucial objective will be to use clear definitions and unambiguous descriptions of the cognitive demands of the experimental task in order to avoid interpretational problems. For the sake of continuity, I will refer to “phonological awareness” in this paper in a general sense as an umbrella term and use the term “sensitivity” instead of “awareness” to refer to tasks that do not require breaking up the speech stream intentionally (cf. implicit phonological knowledge). The term “explicit phonological awareness” will be used whenever I refer to tasks that require the ability to break up the continuous speech stream and identify and isolate phonological units intentionally (cf. explicit phonological knowledge).

3 *Questions about Standard Views on Phonological Awareness Development*

3.1 *The Linguistic Onset-Rime View as a Model of Phonological Development?*

A second controversial issue in the literature on phonological awareness and learning to read is the sequence in which phonological awareness skill develops. The most

widespread idea is that the development of phonological awareness parallels the linguistic onset-rime view of the syllable (see Ziegler & Goswami (2005) for a review). In this view on syllable structure, spoken syllables are not simply strings of individual consonants and vowels but are grouped into two constituents: the onset and rime. As illustrated in Figure 1, the onset is typically defined as the initial consonant or consonant group before the vowel. The rime, in turn, is generally defined as the group combining the nucleus and the coda.

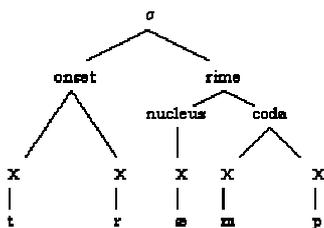


Figure 1: The onset-rime structure of the word *tramp* /træmp/

A crucial aspect of the linguistic onset-rime structure is that it entails a stronger cohesion between the segments within the onset and rime constituents (e.g., between /tr/ and /æmp/) than between the onset and the following vowel, the CV or body (e.g., between /træ/ and /mp/, Fudge, 1987:359). These cohesion differences have a linguistic reality, as there are more restrictions on the combination possibilities of phonemes within the onset and rime than between these units. For instance, the English phoneme /r/ can occur before /æ/ (e.g., in *rup*) but not after /æ/. Although linguists have proposed alternative theories to describe internal syllable structure (e.g., Yip, 2003), the onset-rime model is accepted as a standard theory at least in Germanic and Romance languages (see Geudens (2003) for an overview).

Research has demonstrated that, in addition to linguistic relevance, the onset-rime structure may have behavioral relevance for language users (see Treiman & Kessler, 1995, for a review). By far the most cited evidence for the special role of the onset-rime distinction has come from similarity judgment or detection tasks involving alliteration and rhyme. According to a majority of linguists and psycholinguists, children's and adults' widely acknowledged facility with rhyme is readily explained by the onset-rime distinction, because rhyming words are words with common rimes (Goswami & Bryant, 1990; Treiman, 1992). This body of evidence has formed the input to one of the key proposals in the literature on children's phonological awareness and learning to read (Vihman, 1996:177), i.e., that the development of phonological awareness parallels the linguistic onset-rime model of the syllable from syllables, over onsets and rimes, to phonemes. Access to the higher and larger onset-rime units would develop naturally, whereas access to the lower level of phonemes would require at least some experience with letters and print, be it rather rudimentary.

A demonstration that has been regarded as key evidence for this proposal is that preliterate children and illiterate adults who have very low letter knowledge and no reading ability do not seem to be able to manipulate phonemes while abilities like rhyming or manipulation of syllables are easier to handle (e.g., Kurvers, Van Hout, & Vallen, this volume; Morais *et al.*, 1979; 1986). An often-cited illustration is offered by Morais and colleagues (1979; 1986) in Portuguese illiterate adults. Although most of

illiterate adults could not delete the initial consonant from an utterance or detect a particular phoneme in an utterance, they performed much better when the critical unit was a syllable. Interestingly, they also scored above chance-level in a rhyme detection task. This latter observation that rhyming sensitivity develops naturally in pre-readers has been taken to suggest that the capacity to recognize and produce rhyme is a crucial stepping stone in the development of phonological awareness.

Researchers like Goswami & Bryant (1990) not only argue that children gain access to phonological onsets and rimes at an early stage, but also that “onset-rime awareness” as measured in alliteration and rhyme oddity tasks is significantly related to subsequent measures of phoneme awareness and early signs of reading and spelling (see also e.g., Bradley & Bryant, 1983; Kirtley *et al.*, 1989; but see Hulme *et al.* (2002) for critical comments). The onset-rime view that linguists once proposed to describe syllable structure has grown into a standard view on how children and adults become aware of the phonological structure of words.

3.2 Does onset-rime awareness precede phoneme awareness?

However, despite its widespread character, the onset-rime view on phonological development is not uncontroversial (see also Geudens & Sandra, 2003; Geudens, Sandra, & Van den Broeck., 2004; Geudens *et al.*, 2005). One of the points of discussion is the general claim that children can develop “onset-rime awareness” before the outset of reading whereas phoneme awareness develops partly as a result of learning to read. Yet, a problem in many of these studies is that the cognitive demands of the task and the size of the linguistic unit are frequently confounded. Children’s “awareness” of onsets and rimes is typically explored in rhyme judgment or matching tasks, whereas phoneme awareness is typically studied in more difficult tasks involving the segmentation or deletion of sounds. However, explicit access to onsets and rimes in tasks such as segmentation and deletion may actually require much more experience with print and letters than is commonly assumed.

In this respect, Duncan and colleagues have argued that explicit phoneme awareness even emerges prior to explicit awareness of the larger onset-rime units (Duncan, Seymour, & Hill, 1997; Seymour, Duncan, & Bolik, 1999, see also Nation & Hulme, 1997). In a longitudinal study on the influence of phonological awareness on early reading development of Scottish children, Duncan *et al.* (1997), for instance, reported that five-year-old children found it easier to identify the common phonological unit in an auditory pair when it constituted a single phoneme (e.g., *face* – *food*) than when it constituted the rime (e.g., *lace* – *face*). Children displayed this pattern of performance regardless of their preschool rhyming skills. The authors concluded that smaller units of sounds are more easily identified than larger rime units in tasks tapping explicit phonological awareness and that there is progression from small units to larger units as reading development proceeds (but see Goswami & East, 2000).

Duncan *et al.*’s (1997) findings are constructive. However, one has to be careful in drawing conclusions. The observation that beginning readers find it more natural and even easier to segment a word like *cat* into onset-rime sized units (e.g., *c-at*) than into phoneme sized units (e.g., *c-a-t*) does not necessarily support a small-to-large unit development of phonological awareness. When different segmentation operations are required, i.e., at the phonemic segment level, at the onset-rime level, etc., a preference

for “phoneme”³ segmentation may be reported because this is exactly the type of exercise that is abundantly practiced in class, whereas the children are unacquainted with onset-rime manipulations. Hence, although the small to large development that Duncan *et al.* (1997) suggest may indeed be a good characterization of the development of grapheme to phoneme mappings in reading (Morais, 2003), it remains unclear whether this account reflects spontaneous phonological development.

An illustration may be found in a phoneme segmentation study that we conducted with 60 Dutch-speaking first-graders in Flanders (Geudens & Sandra, 2003). The children (mean age 6;7) had received instruction about letters and sounds and were acquainted with phoneme segmentation exercises in class as part of the phonics reading curriculum. For instance, the teacher presented a word on a board and the children had to clap their hands for each individual grapheme/phoneme in the word and name the letters simultaneously. In these exercises, no emphasis on larger units such as the rime or the CV (body) was included. In the experiment, children had to listen to a CVC pseudoword (e.g., /fot/), repeat it and also pronounce the small sounds/letters in it while clapping their hands for each sound simultaneously. Many first-graders failed to isolate all three phonemes and spontaneously left a larger unit intact (e.g., they produced /fo:/-/t/). This indicates that they naturally found it easier to isolate larger subsyllabic units than smaller subsyllabic units. Interestingly, the results indicated that these larger units need not by any means correspond to onsets and rimes: When first-graders failed to isolate all three phonemes in the CVC, the CV was left intact significantly more often (e.g., /fo:/-/t/) than the rime (e.g., /t/-/ot/; see also Duncan *et al.*, 1997). I will come back to this finding in Section 3.4.3.

In sum, at least in languages like English and Dutch, there seems to be a developmental progression in the phonological domain from larger to smaller phonological units (Ziegler & Goswami, 2005; but see Duncan *et al.*, 1997). Yet, although rhyming sensitivity may develop in the absence of print experience, at least some level of letter knowledge and print experience is necessary not only for the ability to isolate segments but also to isolate onsets and rimes at an explicit level. In this sense, the claim that “onset-rime awareness” develops before the outset of reading whereas phoneme awareness develops partly as a result of learning to read may be misleading (see also Geudens *et al.*, 2005). As mentioned before, it is doubtful that tasks tapping rhyming skill involve “onset-rime awareness” in the exact sense of the word. If one wishes to make a comparison between the phoneme and onset-rime level, care should be taken not to confound linguistic unit size with the cognitive demands of the task.

3.3 *Is Sensitivity to Rhyming Words a Better Predictor of Learning to Read than Phoneme Awareness?*

Another related controversy is the question whether rhyming sensitivity, mostly referred to as “onset-rime awareness”, is a better predictor of learning to read than phoneme awareness. Researchers such as Goswami & Bryant (1990) emphasize the importance of rhyming skill because awareness of phonemes would develop partly as a

³ The term “phonetic segment isolation” may be a more proper alternative to refer to the task at this early stage than the term “phoneme segmentation” as the children’s knowledge may reflect phones rather than abstract phonemes (see also Content, Kolinsky, Morais, & Bertelson, 1986; Geudens *et al.*, 2004).

consequence of learning to read. They conceptualize phonological awareness as a unitary, single developing phonological ability with continuity between rhyming skill and phonemic awareness (see also Anthony & Lonigan, 2004; Stanovich, 2000; Stahl & Murray, 1998). However, the recognition that detection tasks involving alliteration and rhyme have a non-analytical character and require a much lower level of attention than phoneme segmentation tasks, has motivated researchers like Muter and colleagues (Hulme *et al.*, 2002; Muter, Hulme, Snowling, & Taylor, 1998; Nation & Hulme, 1997) to propose that alliteration and rhyme detection tasks involve a phonological ability that is distinct and independent from the phonological ability in phoneme segmentation tasks. The separate phonological ability model is supported by demonstrations that individual differences in phoneme identification and manipulation prove to be a more powerful predictor of individual differences in learning to read than rhyme skills. For instance, in a two-year longitudinal study of four-year-olds, Muter and colleagues (1998) observed that performance on rhyme detection and rhyme production tasks was relatively independent from performance on phoneme identification and phoneme deletion tasks as revealed in factor analyses. Explicit phoneme awareness tasks were strongly predictive of reading and spelling at the end of the first year at school, while tasks involving rhyming skill were not (but see Anthony & Lonigan, 2004, for comments). Adherents of the separate phonological ability model also report evidence from studies showing that dyslexics show deficits on phonemic awareness tasks such as phoneme deletion compared to chronological age and reading age controls whereas they perform as well as chronological age and reading age controls on tasks involving rhyme detection or rhyme judgment (e.g., De Jong & Van der Leij, 2003).

According to Anthony & Lonigan (2004), the distinguishability of rhyming sensitivity from more advanced forms of phonological sensitivity in older children could be a measurement artifact as many older children perform at near ceiling levels on tasks like rhyme matching, rhyme oddity, alliteration matching, and onset-rime blending. Such ceiling effects may render tasks unable to differentiate children at the upper end of the distribution of phonological sensitivity (see also Ziegler & Goswami, 2005). Consequently, the perfect relation between latent rhyme sensitivity and other phonological sensitivity variables may be attenuated (but see Hulme *et al.*, 2002).

Whichever view one wishes to adopt, a learner who wants to break the code in an alphabetic writing system eventually needs to push down to the level of the phoneme, because this is the code that is represented by the graphemes and necessary for the discovery of the alphabetic principle and the formation of fine-grained associations between the written and spoken forms of words in long-term memory (Perfetti, 1992). Nevertheless, attention to global acoustic shapes and rhyming sensitivity could be an early manifestation of the same ability that underlies phoneme awareness and plays an important role in learning to read. Another interpretation is that as children's phonological sensitivity develops, it differentiates into rhyming sensitivity and more advanced forms of phonological sensitivity (Anthony & Lonigan, 2004).

Three further remarks are in order. Firstly, many scholars discussing the debate about the importance of rhyming skills versus phoneme awareness skills translate this debate into a discussion about which phonological units are more relevant for learning to read: onset and rime units versus phoneme units. However, this reasoning is not applicable unless onset-rime effects and phoneme effects are compared within the same task (see also earlier comments in Section 2). Secondly, as pointed out in the previous section, if rhyming sensitivity is an early manifestation of the same ability that underlies

phoneme awareness, the same could hold for sensitivity to similarities based on other large phonological units such as the CV, units that do not form part of the common onset-rime structure (Duncan *et al.*, 1997; Geudens *et al.*, 2005; Morais, 2003). Still, this latter possibility is ignored by most researchers in the field.

3.4 *The Importance of Language-Specific, Orthography-specific, Task- and Material-specific Factors*

Besides interpretational questions about the natural progression of phonological awareness from onset-rime to phoneme units, one could also raise fundamental questions about the general onset-rime view on phonological development. Given the strong emphasis on onsets and rimes and rhyming sensitivity, many researchers consider the onset-rime view as the starting point for the study of phonological awareness, even in languages with completely different phonological characteristics than English (e.g., Chan, Hu, & Wan, 2005; Leong, Tan, Cheng, & Hau, 2005). Nevertheless, a critical analysis of the evidence reveals more ambiguities and problems for the onset-rime view than is commonly believed. In the following discussion, I will point out some of these issues and propose a new flexible perspective in which language-specific, orthography-specific, but also task-specific and material-specific factors are emphasized (see also Geudens *et al.* (2005) for further details).

3.4.1 *Phonological Characteristics*

Research has demonstrated that phonological characteristics of a spoken language have an effect on phonological development (e.g., Caravolas & Bruck, 1993; Goetry, Kolinsky, & Mousty, 2002). For instance, Caravolas & Bruck (1993) suggested that the nature of the Czech phonological lexicon with a large variety of consonant cluster onsets enhances phonological awareness at the difficult individual phoneme level compared to the English phonological lexicon with less complex cluster onsets. In their phoneme deletion task, Czech children found it easier to delete the first consonant in a nonword with a cluster onset than Canadian children (86% versus 39%). Such findings suggest that the salience of particular phonological units in a language may be an emergent property of the distributional structure of the language's phonological lexicon (Kubozono, 1996; Treiman, Kessler, Knewasser, Tincoff, & Bowman, 2000). This view implies that the special character of rhyme as observed in many Germanic and Romance languages such as English, Dutch, German, and French (De Cara & Goswami, 2002; Ziegler & Goswami, 2005) does not necessarily transfer to a different language with different distributional characteristics. For instance, in a language like Korean, where most syllables have a CV-structure, there is no rhyming poetic tradition. Korean uses the syllable rather than rhyming elements as a counting metric (Yoon & Derwing, 2001). Languages like English and Dutch, on the other hand, show a tendency to constrain combinations of segments within the rime unit, thus contributing towards making monosyllabic words more similar at the rime level than at the CV level⁴

⁴ For instance in a reference lexicon of 2671 Dutch words, Martensen *et al.* (2000) observed that only 23% of the possible combinations of nuclei and codas occurred as rimes whereas more than 40% of the possible combinations of onsets and nuclei actually occurred as CVs in the phonological lexicon.

(Kessler & Treiman, 1997; Martensen, Maris, & Dijkstra, 2000). As a consequence of this high rime-redundancy in the phonological lexicon, many phonological neighbors also rhyme. Consider, for instance, a monosyllabic word with a particular rime and CV. Given a random selection of another word in a language with a rime-biased phoneme distribution, there is a higher chance that this word contains the same rime than the same CV. Given the rime-biased lexicon and the resulting rhyme culture (De Cara & Goswami, 2002), English and Dutch language users may experience items with rime and onset overlap as especially salient whereas Korean language users may find sound similarities based on the CV more salient (Yoon & Derwing, 2001). Supporting this view, Yoon, Bolger, Kwon, & Perfetti (2002) demonstrated that when native Korean adult speakers rated the sound similarity of CVCs, they showed a preference for CV-sharing pairs (e.g., /pan/-/pat/), whereas American speakers preferred rime-sharing pairs (e.g., /pan/-/tan/) (see Yoon & Derwing (2001) for similar findings). These findings imply that when one wants to measure a learner's level of phonological awareness it is crucial to take into account the language's phonological structure. If one is for instance interested in the phonological skills of a Korean learner and uses a rhyme judgment task as a measure of phonological sensitivity – based on the general view in the literature and not taking into account the language's characteristics – the results may actually underestimate the level of phonological sensitivity.

It should be emphasized, however, that the predominance of a statistical pattern in the phonological lexicon of a language does not necessarily lead to a particular representational structure which is then used for organizing all spoken items in all tasks (see also Kubozono, 1996). On this view, the special sensitivity to rime units in languages like English and Dutch do not necessarily reflect a fixed onset-rime structure of spoken syllables. For instance, Geudens and colleagues (2005) demonstrated that although Dutch-speaking pre-readers (mean age 5;6) were indeed most sensitive to similarities at the rime level in a similarity judgment task (e.g., /fas/-/mas/ or /fas/-/fak/?), they did not consider rimes to have a special status in tasks without rhyming words. In a syllable recall task (e.g., /tɛf/, /rɪs/, /nal/), the children were as likely to produce recombination errors that broke up the rime (e.g., /tɛs/) as errors that retained the rime (e.g., /ref/). Thus, a rime effect was obtained in a task that highlighted the phonological similarity between items sharing their rimes, but this effect disappeared in tasks without repetition of rime units. This pattern seems to suggest that the special character of rimes in languages like Dutch and English may actually be based on similarity relations and may not reflect a fixed perceived structure of spoken syllables (see Geudens *et al.*, 2005, for further comments).

3.4.2 *The Nature of the Orthography*

Besides phonological characteristics, the orthography of a particular language could also have an impact on phonological development. As different orthographies have different rules for mapping written symbols onto sounds, the consistency of such mappings in a given language may influence how a learner's phonological awareness development proceeds. Ziegler & Goswami (2005) have referred to a similar proposal as the “psycholinguistic grain size theory”. To illustrate, English has an opaque or a deep orthography in which the relationships between graphemes and phonemes are inconsistent and many exceptions are permitted. The grapheme <ou>, for instance, has many different pronunciations as *cousin*, *cough*, *soul*, *would*, *wound*. As a result, in

transparent languages like Italian, German, and Dutch, the phoneme unit may become a highly salient unit much sooner than in languages with an opaque relationship between the spelling and sound system. Indeed, learners of transparent languages generally perform much better on phoneme segmentation and deletion tasks at an earlier age than learners of English (see Ziegler & Goswami, 2005, Table 1).

For learners of non-alphabetic scripts, like Chinese or Japanese Kana, tasks requiring explicit awareness of the smallest segment level are even harder to perform than for learners of English (Sproat, 2005). For example, a vowel reversal task in which a stimulus like /poki/ has to be transformed into /piko/ is very hard for literate speakers of Japanese to do, though it is quite easy for literate speakers of English. Interestingly, in contrast to what has been demonstrated for segment awareness and sensitivity to rhyming words, the ability of speakers to manipulate syllables (e.g., transforming /poki/ into /kipo/) seems to be unaffected by the writing system one learns and can also be handled by adult illiterates (Prakash, Rekha, Nigam, & Karanth, 1993).

It is important to emphasize that the ability to achieve phoneme awareness should not be considered as a mere epiphenomenon of learning an alphabetic script as illustrated by Sproat (2005) in Indic participants. Indic scripts are often taught as syllabaries and do not count as alphabetic. Although learners of Indic who cannot read an alphabetic script such as English have been shown to have less phonemic awareness than their counterparts in places where alphabetic scripts are used, the ability to manipulate phonemic segments is not categorical as Kannada children can develop some, albeit weak, ability to reverse phonemes in a phoneme reversal task before they start learning English. As Prakash *et al.* (1993) argue, one factor that seems to affect phonemic awareness in readers of non-alphabetic scripts such as Indic is how “noticeable” particular glyphs are represented in the orthography. For example, Prakash and his colleagues (1993) note that their Hindi adult participants performed 95% correct on a phoneme deletion task in which they had to delete a segment that formed a separate glyph from the vowel, whereas they were not able to correctly delete a segment that had no separate glyph from the vowel. In other words, even learners of non-alphabetic scripts are able to perform manipulations on the level of the individual phoneme in cases where the script supports it, for instance, when glyphs are separable from their surroundings or are written inline.

Such findings evidently have implications for the relationship between phonological awareness tasks and success in learning to read and write. Firstly, they suggest that when developing a particular phonological awareness task, one should take into account particular orthographic characteristics in addition to specific phonological properties of the language. Secondly, the findings suggest that the utility of a phonological awareness task as a predictor of reading development varies across different languages. Support for this latter claim is found in studies on the manifestations of dyslexia in different languages (e.g., Patel, Snowling & De Jong, 2004). In languages with an opaque orthography such as English, many studies show that dyslexics have a deficit in phonological awareness, more specifically phonemic awareness, and that these weaknesses continue to persist into adulthood and are independent of nonverbal IQ (e.g., Bruck, 1992). However, although dyslexics in transparent languages like German or Dutch show early deficits in phonological awareness, their phonological awareness problem turn out to be much weaker than in English. When researchers do not take into account the developmental level of the dyslexics, for instance by using a

phonological awareness task that is too easy and not adapted to the developmental level, it may even become hard to trace the phonological awareness deficit in dyslexics of transparent languages (see De Jong & Van der Leij, 1999; 2003; Patel *et al.*, 2004). Combined with the consistent mapping of graphemes onto phonemes, many beginning readers of transparent languages follow a phonics approach with emphasis on the phoneme level and on grapheme-phoneme correspondences which may have a positive effect on their phonological awareness development (see Landerl *et al.*, 1997; Patel *et al.*, 2004).

Interestingly, consistency of a particular orthography also seems to have a strong impact on the reading problems associated with dyslexia. English dyslexics especially experience problems with the accurate reading of long unfamiliar words and nonwords (Griffiths & Snowling, 2002). Yet, for dyslexics in transparent languages, it is not so much the accuracy, but the fluency of the reading that is affected (De Jong & Van der Leij, 2003): Dyslexics in regular orthographies read more slowly than normally developing readers. Such impairments in reading speed or fluency have been observed with rapid automatized naming tasks (RAN). These tasks measure the speed with which names of symbols (letters, objects, colors) can be retrieved from long-term-memory (De Jong & Van der Leij, 2003).

Thus, although performance on phonological awareness tasks predicts success in learning to read irrespective of the transparency of the orthography (see Hulme *et al.*, 2005; but see Castles & Coltheart, 2004; Van den Broeck, 1997, for comments), the relationship between phonological awareness and reading is much harder to detect in children learning to read in transparent orthographies. Therefore, when exploring such relationships between phonological awareness and early reading, it is crucial to use tasks that are sensitive to the learner's developmental level (see also Ziegler & Goswami, 2005), and to use measures that take into account the variables' range and distribution (see Geudens *et al.*, 2004). To illustrate, in a phoneme isolation/segmentation study with Dutch-speaking children, we carefully considered these factors and demonstrated a strong contingency between our observed measure of phoneme awareness⁵ and the children's early decoding performance. We studied Dutch-speaking six-year-old kindergartners' skills to isolate phonemes in simple CV and VC pseudoword syllables (e.g., /ɪ/-/o:/ in the CV /fo:/) and followed up the children's segmentation skills at the outset of reading instruction three months later (Geudens & Sandra, 2003; Geudens *et al.*, 2004). As can be seen in Figure 2 at the left, none of the children who had problems in the segmentation task at the end of kindergarten (the poor group) obtained good reading scores after six months of learning to read. At the same time, good performance on the segmentation task (the good group) was no guarantee that a child obtained high reading levels, i.e., it seemed "necessary" but not "sufficient". Then, we followed up the children's segmentation skills and replicated the segmentation task three months later in first grade. The definition of poor, average and good segmenters was based on the children's segmentation scores in kindergarten before the outset of reading instruction.

⁵ In our view, phoneme isolation or segmentation skill is not considered to be a purely phonological skill. The development of explicit phoneme awareness is interpreted in interaction with informal print-related experiences and explicit instruction about letters and sounds.

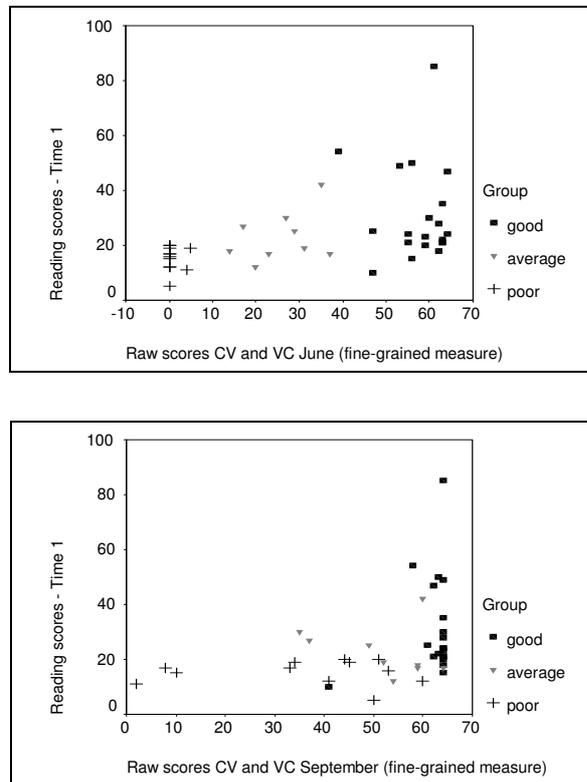


Figure 2 and 3: Relationship between CV-VC segmentation skill in June and September and reading scores after six months of reading instruction (from Geudens *et al.*, 2004)

Remarkably, when the reading performance of those children who could not isolate a single phoneme in kindergarten (poor group) was related to their segmentation scores three months later in September, their reading level remained inferior despite the notable improvement of the children's segmentation skills and their letter knowledge (Figure 3). Even when the children had had the chance to enhance their reading skills near the end of first grade, they still did not seem to be able to exceed the average reading level. This finding seems to suggest that although letter knowledge is undoubtedly important for learning to read (Hulme *et al.*, 2005), it does not help much in the absence of insight into the phonological structure of words.

3.4.3 Task-specific and material-specific factors

Whereas several researchers currently recognize that features of the spoken language and the orthography affect phonological development, and that depending on these characteristics some linguistic units may become more important in some languages than others (e.g., Ziegler & Goswami, 2005), it is often ignored that preferences for

phonological units may also differ within the same language, the same population and even within the same experiment (e.g., Geudens & Sandra, 2003; Geudens *et al.*, 2004; Treiman *et al.*, 2000). To illustrate, it has generally been argued that the cohesion within the natural onset and rime units is a key source of the beginning reader's difficulty to segment words and pseudowords into phonemes (e.g., Adams, 1990; Schreuder & Van Bon, 1989; Stahl & Murray, 1994; Treiman, 1992).

However, what is often ignored in this framework is the importance of perceptual- and articulatory-phonetic factors. Phonemes are very abstract representations. Skilled alphabetic script readers "hear" individual sounds in the continuous airflow because they have acquired the symbols which help them to abstract over the highly variable acoustic events (Johnston, Anderson, & Holligan, 1996). However, at the phonetic surface, the syllable *cat* does not consist of discrete segments. Hence, there is no way to know at a conscious level that *cat* consists of the phonemes, /k/, /æ/, /t/, unless by having acquired those symbols that stand for these sounds, for instance, through print exposure, intensive training, or instruction about letter sounds. If one defines explicit phonological awareness as an ability to break up the continuous speech stream on demand, knowing how to abstract from phonetic features that characterize the speech signal is one aspect that reveals such awareness (Geudens & Sandra, 2003). This line of reasoning emphasizes the importance of the learner's own articulation and perception in the gradual development of phonemic representations. In line with this suggestion, there is evidence that partial phonetic cues in letter sounds and in pronunciation of words have a strong impact on children's first attempts at decoding and writing (e.g., Rack, Hulme, Snowling, & Wightman 1994).

Given the importance of phonetic cues in phonological awareness development, it seems reasonable to suggest that phonetic properties of consonants (e.g., sonority classes) have an impact on explicit phonological awareness tasks. Material-specific properties could not only influence but even bias results if not taken into account in the critical comparison. In support of this hypothesis, the often observed special cohesion within onset and rime units (e.g., Treiman & Kessler (1995) for a review) seems to fluctuate depending on the nature of the consonants used before and after the vowel. For instance, in a phoneme segmentation task in which beginning readers were asked to pronounce the phonemes in CV and VC words (e.g., /l/-/a:/ in /la:/, *la*, "music note"), Schreuder & Van Bon (1989) mainly used items with vowel-like sonorants like /l/, /r/, /m/, and /n/ and observed that first-graders found it much harder to break up a rime unit (e.g., VC /a:l/, *aal*, "eel") than to segment between the onset and the rime (e.g., in the CV /la:/, *la*, "music note"). On the contrary, Bus (1985) mainly used items with obstruents like /t/, /k/, /f/, and /s/, and observed the opposite pattern: children found it much easier to break up a rime unit (e.g., the VC /ap/, *aap*, "monkey") than to segment on the natural onset-rime boundary (e.g., the CV /fe:/, *fee*, "fairy"). Sonorants such as nasals and liquids resemble vowels to a much greater extent (e.g., formant frequencies, opening of the oral cavity etc.) which may make it much more difficult to distinguish them from vowels than non-vowel-like consonants such as stops and fricatives.

Interestingly, in Geudens & Sandra (2003), we tried to take into account these considerations as much as possible in a similar CV and VC phoneme segmentation study in Dutch-speaking children, by including as many stops, fricatives, nasals, and liquids, by matching our CV and VC pseudowords on phoneme material (e.g., /fa:/ vs. /af/). We also took care to control for children's perception errors, for instance by

considering the child's own perception of the stimuli as a basis for the segmentation scoring. Doing so, we failed to support the predictions derived from the onset-rime view: Pre-readers as well as first-graders found it easier to isolate the phonemes within a rime, i.e., to break up the cohesion within the rime, than within the CV. We replicated these findings at the outset of reading instruction (Geudens et al., 2004). After having received phonics reading instruction for three weeks, the children still found it harder to isolate the phonemes in CVs than in their reversed VCs (e.g., /to:/ vs. /ot/). We also demonstrated that this development from VC to CV segmentation poses comparatively increasing difficulties for poor segmenters compared to good segmenters. Even when both groups were statistically matched on VC segmentation, by considering the scores for good segmenters in the last month of kindergarten, and those for poor segmenters at the outset of reading instruction, their performance on the reversed CVs was still not equated: Poor segmenters found it harder to move from VC segmentation to the more complex CV segmentation. As I have pointed out before, these children who arrived later at VC segmentation, and required more learning opportunities to segment CVs, also showed more problems in mastering early word decoding skills (see Geudens & Sandra, 2003, for details).

A further illustration of the importance of material-specific factors is provided by Ventura, Kolinsky, Brio-Mendes, & Morais (2001) who showed that participants' responses on a phonological awareness task may not only depend on phonetic properties of stimuli but also on stimulus-specific orthographic aspects. When Portuguese adult literates had to combine parts of two words (e.g., /bar/, *bar*, "bar" - /mel/, *mel*, "honey") into a new pseudoword (e.g., /beɪ/) they preferred onset-rime C/VC blends for words with an orthographic CVC structure (e.g., /beɪ/ when blending /bar/ and /mel/) and body-coda CV/C blends for words with an orthographic CVCe structure (e.g., /teɪ/ when blending /tes/, *tese* "essay" and /val/, *vale*, "valley" with a mute final "e"), even though both rime pronunciations were exactly the same.

Clearly, these findings do not fit in with the onset-rime view that is so commonly referred to in the literature on phonological awareness. As long as particular conditions such as phonetic characteristics of consonants or orthographic properties of stimuli reduce the salience of onset and rime units, such findings can be integrated easily within the standard view in the literature that phonological knowledge is shaped by the onset-rime structure of the syllable. However, it is hard to understand how the idea of a fixed syllable structure is compatible with the opposite pattern, namely higher salience of units that cross the onset-rime boundary. Nevertheless, such effects are observed in Dutch as well as in other languages, both in tasks tapping implicit phonological knowledge such as in analyses of recall errors (e.g., Geudens *et al.* 2005; Yip, 2003) and in tasks tapping explicit phonological awareness such as segmentation and blending (e.g., Duncan *et al.*, 1997; Geudens & Sandra, 2003; Ventura *et al.* 2001).

4 Conclusion

There is a consensus among researchers that one of the most basic difficulties in learning to read stems from a failure in acquiring phonological awareness (Adams, 1990; Goswami & Bryant, 1990; Vellutino *et al.*, 2004). However, despite this well-documented relationship between phonological awareness skills and learning to read, questions about the construct of phonological awareness and its developmental

progression remain. In this paper, I have addressed some of these controversial issues in order to increase the insight into the relationship between phonological awareness and learning to read.

Apart from the problem of misinterpretations due to the ambiguous use of terminology, the standard view on phonological awareness is not without controversy. Although many researchers have used the onset-rime view as a starting point for the study on the development of phonological awareness in relationship to learning to read in various languages, it may be more fruitful to set out from a more flexible account in which the importance of language-specific, orthography-specific but also material-specific and task-specific factors are emphasized (Geudens & Sandra, 2003; Geudens et al., 2005). According to this proposal, the development of phonological awareness as well as the salience of particular phonological units do not reflect a fixed phonological structure, which is the standard view in the literature, but fluctuate depending on several factors such as: the developmental level of a child, the amount of letter knowledge and reading instruction, the type of reading instruction with different emphases on phonological units, prosodic characteristics of the learner's language, consistency of the grapheme-phoneme mappings in alphabetic scripts, but also often ignored material-specific factors such as characteristics of the phoneme material, perceptual and articulatory-phonetic factors etc. Depending on these characteristics, some linguistic units may turn out to be more salient in some phonological awareness tasks than others. Correspondingly and importantly, some tasks may also become more sensitive as a predictor of early reading skills than others and different relationships with later reading performance can be observed.

Even though this paper does not question the link between phonological awareness and learning to read, one should be aware that phonological awareness is only one part of a complex series of skills that the beginning reader has to acquire. Evidently, there is much more to phonology than awareness of phonological units. Acquiring awareness of the phonological structure of a language not only means acquiring phonological knowledge of particular phonological units but also becoming sensitive to aspects like intonation and rhythm of a particular language. Although the study on phonological awareness is the most thoroughly developed body of research on phonological processing (Wagner & Torgeson, 1987), a significant relationship with basic reading skills has also been established for other phonological processing skills such as phonological short-term memory and rate of access to phonological information in long-term memory (see De Jong & Van der Leij, 2003; Vellutino *et al.*, 2004). Several researchers have argued that difficulties with phonological awareness actually stem from more basic phonological weaknesses in the integrity of children's phonological representations, which also play a central part in other phonological processing skills (e.g., Morais, 2003).

Furthermore, one should not ignore that there is much more to reading than phonological awareness. Knowing how to segment words into the basic language units for instance may be a necessary but evidently not sufficient condition for early reading success. Reading also requires that children establish automatic, precise and redundant connections between print and speech at fine-grained, larger subword, and word levels (Geudens & Sandra, 2002; Morais, 2003; Perfetti, 1992; Van den Broeck, 1997). Hence, curricula for learning to read should not only focus on phonological awareness in relationship to orthographic awareness but obviously also on other relevant skills such as oral language ability, vocabulary, reading fluency, the development of word-specific

knowledge etc. Clearly, these skills are beyond the scope of this paper but should not be ignored in a theory on learning to read. Although phonological awareness is a well-studied and essential skill for the beginning reader, it is only one piece of the puzzle and its development may be less straightforward than often believed.

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FIRST-TIME L2 READERS: IS THERE A CRITICAL PERIOD?

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1 Introduction

The view in post-industrial countries that immigrants are the main source of economic growth rests on the misguided assumption that the typical immigrant has spoken and written second language skills (see Dustman & Fabbri, 2003).^{6,7} That at least literacy skills may not support such growth is suggested by 1990s statistics from the USA which reveal that the education level of 40% of post-compulsory-school age, employable immigrants (i.e. 18-64 year-olds) is primary or lower (Coulombe *et al.*, 2004; Mace-Matluck *et al.*, 1999). Worldwide statistics on literacy show 20 million refugees (Oxford Brookes University Development and Forced Migration Research Unit) and 861 million adults unable to read in their native language or any other language (UN Literacy Decade Project). It is thus unsurprising that this 40% includes adult immigrants without any schooling whatsoever. Do educators and policy makers know what prognosis is for immigrant adults confronted with the challenge of learning to read for the first time in a second language (L2)? While reports from teachers of English as a second language point to the consensus that learning to read is extremely laborious for such individuals, the dearth of empirical studies makes it impossible to know whether unschooled L2 adults have the same potential to become readers as do pre-school children. The answer to this question has important implications: if the evidence indicates the potential exists, then the case can be made for the allocation of sufficient pedagogical resources to support unschooled immigrant adults' development of literacy.

The issue of potential can usefully be considered from a biological perspective, where the relevant question is whether the same sort of 'critical period' exists for learning to read as has been proposed to exist for spoken language acquisition (Lenneberg, 1967).⁸ For example, in their discussion of how literacy affects cognitive development, Reis & Castro-Caldas (1997:444) begin with the statement that "if one of

⁶ We are grateful to the British Academy (SG:34193) for their support in carrying out this study.

⁷ Thanks go to the two external reviewers of this chapter (Martha Bigelow and an anonymous reviewer), the two other editors of this volume and to the various audience members who have listened to presentations of this study. All have provided a wide range of stimulating responses to the ideas presented here.

⁸ Note that Lenneberg's attempt to connect the end of the critical period with the completion of cerebral lateralization was quickly met with alternative proposals and challenges to this conclusion; see e.g. Seliger (1978) and Krashen (1973), respectively.

the basic skills is not acquired, in the proper moment of the developmental process, the final function will be distorted". It is not unreasonable to entertain the notion that a critical period exists for reading, given the evidence from Reis and Castro-Caldas and others (e.g. Kurvers *et al.*, this volume; Olsen, 2002; Tarone & Bigelow, 2005) that literate and non-literate minds fundamentally differ. This alone does not entail a critical period since learning, by definition, alters the mind/brain.

Evidence for the end of a critical period for the acquisition of spoken language around puberty comes from various sources, including the tragic case of Genie, whose deprivation of linguistic stimuli until nearly age 14 seems to have led to atrophy of the mechanisms responsible for the acquisition of syntax (Fromkin *et al.*, 1974). Research on American Sign Language users whose exposure began in infancy, childhood or adolescence (Newport, 1990) provides further evidence in support of a critical period. In L2 acquisition, large group studies such as Johnson & Newport's (1989) and Patkowski's (1982; 1990) indicate that the critical period also applies to L2 acquisition. Age of closure of the critical period, the role of exposure to the L2, and indeed the existence of a critical vs. sensitive period have been questioned by L2 acquisition researchers (Long, 1990; Moyer, 2004; Flege, 1987 and Bialystok & Hakuta, 1999, respectively). However few contest the observation that native attainment is far more likely for those exposed to an L1 or an L2 before puberty.

Investigation of a critical period for the development of L2 reading is complicated by the age factor in its connection to the development of second language proficiency/linguistic competence, which in turn involves variation in exposure to the target language. VanPatten (1988:251), for example, notes the disadvantage older immigrants may have due to background profiles which limit their interaction with native speakers of the L2. Cause and effect become entangled when one considers how non-literate adult immigrants' inability to access print further limits their exposure to the L2. Fortunately, in exploring whether adults with no experience of interaction with print are capable of learning to read for the first time in an alphabetic script, a straightforward avenue of investigation is possible. We can ask questions similar to those long asked by child reading development researchers.

2 *Research on Children's Early Reading*

In comparison to the vast volume of research on how young children learn to read for the first time in their native language, the evidence base on adults is nearly non-existent, as noted in Comings *et al.* (2003), in Hawkins (2004) and in Ogle (2001). Kurvers (2002, and this volume) is one of the few to investigate with an unschooled immigrant population the same sort of cognitive and linguistic issues as those who study children's reading. More common have been studies addressing the interplay between learners' development of reading in their native language and in their L2. For example, Burtoff's (1985) study of Haitian learners of English showed adults who first learned to read in their native language using the Roman alphabet transferred these skills to English. Robson's (1982) study of the development of English literacy by US Hmong refugees indicated that it is native language alphabetic skills that lead to L2 reading progress and

not education *per se*. (See also Brown & Tavares, 2004.)⁹ Research on L2 reading by non-literate adult immigrants has thus far understandably focused on the classroom (Burt *et al.*, 2003; Condelli *et al.* 2003, and this volume; Cunningham Florez, 2003; Huntley, 1992; Shameem *et al.*, 2002) rather than on the internal cognitive processes involved when adults with no schooling attempt to learn to read in an L2.

2.1 Phonological Awareness and the Development of Reading

With mere exposure, few children fail to develop adult linguistic competence in the language to which they are exposed; even exceptional circumstances pose few obstacles (Bishop & Mogford, 1988). Reading not only typically requires instruction for mastery, but it is also not uniformly successful (1% to 10% of all children experience problems, depending on language/writing system; Muter, 2003). While the precise nature of the relationship between these steps remains unclear, findings on the cognitive prerequisites for children's development of reading in an alphabetic script converge on stages of phonological awareness children pass through prior to and during the successful development of reading. Problems at initial stages are a harbinger of later reading difficulties, but these can be successfully addressed by instruction targeting phonological awareness (Rayner *et al.*, 2001).

By at least age three, children begin to develop metalinguistic (or *epilinguistic*; Gombert, 1992) awareness of phonologically defined units of speech. Pre-schoolers can identify and manipulate syllables and sub- or intra-syllabic constituents, and with the development of reading in an alphabetic script, metalinguistic awareness of phonemes emerges (Bryant & Bradley, 1983; Goswami & Bryant, 1990). If a critical period for learning to read does not exist, we should expect to see the same patterns of development for unschooled adult immigrants who have had the opportunity to start learning to read, through participating in English as a second language (ESL) classes.

2.2 Research on Phonological Awareness

Rather than review the sizeable body of research on children's phonological awareness, we limit discussion here to the studies deemed appropriate for replication with an adult immigrant population. This discussion also provides examples of typical studies of young children.

2.2.1 Awareness of 'Word'

As a large phonological unit (relative to the syllable, onset and rhyme), one might expect children's awareness of *word* to emerge earliest. Karmiloff-Smith *et al.* (1996) explored children's sensitivity to this unit in a study involving 48 middle class children in London between the ages of four years ten months and six years five months. Children listened to a story consisting of 'easy' words in which 32 of these were

⁹ The reader may query the omission here of reference to the body of work on children learning to read first time in a second language (some of which cover the issue of late native vs. second language reading). Discussion of this research is, however, beyond the scope of a paper dealing with individuals who have the disadvantage of being both past the age at which the critical period for spoken language is assumed to end (puberty) and beyond the age of compulsory schooling (age 16).

selected as targets and were balanced in phonological composition. The experimenter read the story, and after each of the 32 mid-sentence words, s/he paused and asked “What was the last word I said?” After the child’s response, the experimenter backtracked to a natural restarting point and read until after the next target word. Although the children received no information on what was meant by *word*, when also asked “What was the last *thing* I said?” their responses differed, confirming that they knew what *word* meant. Rejecting conclusions from earlier work that children under seven were better on content than function words, Karmiloff-Smith *et al.* found no significant difference between them. Pilot testing demonstrated little word awareness by pre-schoolers (three-year olds performed very poorly) and fully developed awareness for older children (six- to seven-year olds performed at ceiling). The authors concluded that age four is the transition for children’s metalinguistic awareness of *word* as an entity. (However, these conclusions must be interpreted cautiously given a recent replication of this study by Kurvers & Uri (2006) that points to poor performance by Dutch and Norwegian 4- and 5-year olds, whose accuracy rate was only 25%).

Table 1: *Young children’s awareness of word (Karmiloff-Smith et al., 1996)*

Word type	4-year old group	5 year-old group
Function/closed class words	73.70%	95.31%
Content/open class words	76.82%	97.14%

2.1.2 *Awareness of Syllable, Onset/Rhyme and Phoneme*

Burt *et al.* (1999) looked at units smaller than *word*, i.e. *syllable*, *onset*, *rhyme* and *phoneme*. In their study of 57 normally developing children in Northeast England between the ages of three years and ten months and four years and ten months, the researchers not only rejected social class as a significant factor but also confirmed the order of emergence of phonological awareness observed by numerous others who have shown that children’s awareness is of increasingly smaller phonological units. Prior to schooling, the child is aware of the syllable, then of the sub-syllabic units onset and rhyme, and with training in learning to read in an alphabet script, the phoneme. Burt *et al.* measured children’s awareness using a range of tests. The results shown in Table 2 represent combined social class scores, confirming the pattern found in studies by others: phonological awareness emerges first for syllables and last for phonemes, with awareness of the sub-syllabic units onset and rhyme a mid-way point. On the basis of theirs and others’ studies, Burt *et al.* suggest that prior to schooling onset awareness is less well established than rhyme awareness. Similarly, Burt *et al.* note that others’ results on phoneme segmentation are in line with theirs.

Table 2: *Pre-school children’s phonological awareness (Burt et al., 1999)*

Task	3;10 – 4;3	4;4 - 4;10
Syllable	55.6%	64.9%
Rhyme	39.3%	41.3%
Onset	25.6%	45%
Phoneme	8%	24.9%

Burt *et al.* administered standard tasks to collect their data. A syllable segmentation task involved 12 low-frequency two-, three-, four- and five-syllable words where the child had to tap or clap out the number of syllables. They further included both mono- and multi-syllabic words. An onset and a rhyme awareness task each involved an ‘odd-one-out’ technique where the child heard a set of several words and had to say which of the four did not match in terms of its initial sound or its rhyme. For both tasks, 12 sets of familiar words were used. Finally, a phoneme segmentation task required the child to listen to 12 individual words and say the individual sounds in each; children found this task very challenging, with no child attaining a score of 100%.

Karmiloff-Smith *et al.*'s and Burt *et al.*'s studies combined point to an order of emergence for phonological awareness (word > syllable > rhyme > onset > phoneme) about which we can ask: are the same patterns found for adult first-time L2 readers? By replicating Karmiloff-Smith *et al.*'s and Burt *et al.*'s phonological awareness tasks, we can refine the question posed in Section 1 above: Do non-literate adult immigrants follow these same developmental patterns of phonological awareness as they grapple with reading in English? First let us take a look at additional, relevant research on reading.

3 Studies of Adults

3.1 Reading

As noted above, the phonological awareness of adult first-time *second language* readers has hardly been probed, but we can extrapolate from Morais *et al.*'s (1979, 1987, 1988) research on Portuguese illiterate adults and similar studies by others (see also Gombert 1994 and Lukatela *et al.*, 1995). Similar to what has been found for children, first-time adult native language readers display only awareness of syllable, onset and rhyme prior to reading/schooling. Phonemic awareness emerges only with instruction in alphabetic script reading or phonemic awareness training. These findings point to the conclusion that emergence of phonemic awareness is dependent on experience rather than on biological, maturational factors. Research further indicates that literacy in an alphabetic script and concomitant phonemic awareness are necessary for transfer of reading skills. An otherwise literate adult learning to read in an alphabetic script for the first time faces some of the same cognitive challenges as the pre-school child. For example, Ben-Dror *et al.* (1995) found that Hebrew speakers/readers were worse than English speakers/readers on phoneme segmentation tasks (graphemes in unpointed Hebrew correspond most often to whole/CV syllables). Similarly, studies of L2 English readers from a logographic script background (Chinese) without exposure to Roman alphabet Pinyin reveal that mere exposure to written English is insufficient for the development of phonemic awareness (Ng, 2000; Read *et al.*, 1986; Su & Huang, 2004). Read *et al.* however, found that early Pinyin exposure without sustained use still enabled Chinese logographic readers to manipulate phonemes comparable to those literate in an alphabetic script.

3.2 *Linguistic Competence*

We can conclude from the studies of children and adults learning to read in their native languages that with appropriate training, individuals of any age can acquire the phonemic awareness required to support the development of reading in an alphabetic script. This points to absence of a critical period for reading. However, adults learning an L2 and learning to read for the first time in that language face a dual challenge, and that challenge is compounded if the complete acquisition of spoken language is no longer possible, i.e. if there is a critical period for the acquisition of spoken language. Unlike many non-literate adult immigrants, the child will have internalized his/her native language phonology, morphology and syntax and will have acquired a vocabulary of thousands of words prior to starting to learn to read (Gough, Juel & Griffith (1992:36). What level of linguistic competence is necessary to support reading in a second language? The idea of 'linguistic threshold' or 'language threshold' (Alderson, 1984, 2000; Bernhardt & Kamil, 1995; Bernhardt, 2005) addresses the question of how interlanguage competence interacts with native language reading skills to enable the development of a range of L2 reading skills, including comprehension. Earlier work by Cummins (1979) indicates a common L1/L2 cognitive/academic language (CALP) which allows proficient native language readers to straightforwardly transfer their skills to the task of reading in a second language (see also Saville-Troike, 1991). When the L2 learner has no such skills to draw on, the notion of threshold assumes greater importance. Unlike a beginning-level native-language-literate learner who can read L2 text without comprehending it, a non-literate learner at the same level of oral proficiency can do neither. With no L1 metalinguistic skills to transfer and little L2 linguistic competence upon which the development of metalinguistic awareness can 'piggyback' (Gombert, 1992), such a learner is more like a baby than a pre-school child. What then, are the components of the linguistic threshold? While the threshold straightforwardly implicates vocabulary (perhaps due to ease of measurement), Alderson (2000:37) notes that 'the ability to parse syntax into its correct structure appears to be an important element in understanding text', referring to Berman's (1984) earlier work on the effect of complex syntax on written text processing. In addition, work on native-speaking children's reading problems suggest that phonological competence is an important component of the linguistic threshold. Children who fail to form 'stable and highly discriminable representations' of aural input have problems developing phonological awareness and learning to read (Foy & Mann, 2001:319). If a non-literate adult's phonological development is incomplete in the L2, this can be expected to have a similar effect on the development of phonological awareness and reading.

Vocabulary has received attention in second language acquisition, including in its relation to reading. However, the focus has primarily been on educated L2 learners (e.g. Laufer, 1992; Nation, 2001). As we shall see, lack of research on adult learners with little or no schooling presents problems for inclusion of vocabulary in any study of their development of reading. This is unfortunate, as vocabulary is a component of the linguistic threshold that seems immune to a critical period. The idea of a critical period for spoken language acquisition of course does not entail failure by adults to make any progress in the acquisition of other aspects of a second language, as is routinely noted by those who address this issue. Controversy regarding the operation of linguistic

mechanisms in the adult L2 acquisition of syntax notwithstanding,¹⁰ research over the last three decades on adults' acquisition of morpho-syntax in a naturalistic context – without L2 instruction – points to post-puberty learners' ability to attain very high and even native levels of competence (e.g. Ioup *et al.*, 1994; Vainikka & Young-Scholten, 2002). In fact, data from the large-scale cross-sectional and longitudinal studies of adult immigrants' oral production discussed in the introductory chapter in this volume were key in arguing that adult L2 learners make use of the same linguistic mechanisms as children do in acquiring language. While many – but not all – of the adult immigrants in the longitudinal studies in Europe and in the USA failed to attain high levels of oral proficiency, this may have been due to limited L2 exposure (VanPatten, 1988; Moyer, 2004). Relevant to the present study is not whether it is possible for an adult to attain native-like competence in an L2, but rather the extent of morpho-syntactic competence necessary to support a non-literate adult's reading development in a second language.

Research also shows that while a second language learner's native language exerts a strong influence, particularly at the early stages, with sufficient input from native L2 speakers, even post-puberty learners can develop high levels of phonological competence in their L2 (Major, 2001; Moyer, 2004). The problems less successful learners have are with those very aspects of phonology the awareness of which precedes and accompanies learning to read, namely with the consonant clusters that constitute complex onsets and rhymes and with new phonemic distinctions (Young-Scholten & Archibald, 2000; Brown, 1993, respectively).

4 The Study

Bearing in mind discussion of the two studies of children in Section 2.2. above, we now turn to a study of the reading ability, phonological awareness, and linguistic competence of adult immigrants learning English. Pre-school children succeed on word, syllable and sub-syllabic awareness tasks, but it is not until after a year or two of schooling – when they begin to read – that they score well on phonemic awareness tasks. This leads to the prediction that adults with little or no schooling will score well on phonemic awareness tests only once they have had comparable reading instruction *and* if they demonstrate the ability to read. When it comes to the interaction of linguistic competence with the development of phonological awareness and reading by non-literate adults, no directly relevant studies exist. On the one hand, the studies by Morais and colleagues discussed in Section 3.1 involve adults not literate in their *native* language. On the other hand, Alderson's linguistic threshold introduced in Section 3.2 refers to *educated* adults who are in the process of developing linguistic competence in a second language.

4.1 Subjects

Immigrants with no schooling come from a variety of language backgrounds and live in a variety of countries, but we selected Somali and Vietnamese adults learning English due to their representation among 'literacy-level' learners in Seattle, where we had the resources to carry out the study. Somali and Vietnamese both use the Roman alphabet, with additional diacritics. Because we decided to include in our sample learners with

¹⁰ See e.g. White (1989).

some primary schooling, the shared alphabet is fortuitous given the likelihood that any schooling in an alphabetic script will have led to phonemic awareness and thus the expectation that phonemic awareness and any associated reading skills will transfer.

Table 3 shows a sample including 17 adults with a range of native language (NL) schooling, length of residence (LoR) and ESL instruction. Eight of the 17 experienced no native language schooling, while the other 11 were attending school from one to five years. Two of the Vietnamese learners experienced schooling in Chinese (which they also spoke), where a logographic rather than alphabetic script was involved. Of these two learners, V2 attended an exclusively Chinese-medium school. If prior schooling in native language confers an advantage in the learner's development of phonemic awareness only when an alphabetic script is involved, we might expect V2 to pattern similarly to the learners without any schooling, rather than to the learners with some schooling in Vietnamese or Somali.¹¹ All but one of the 17 had native language (NL)- or English-literate children, siblings or partners.

Table 3: *The learners*

	Sex	Age at testing	NL schooling prior to immigration	ESL instruction	Length of US residence
S3	M	30	0 yrs	2 wks	2 yrs
V1	F	51	0 yrs	1 yr	20 yrs
V6	F	70	0 yrs	1 yr	2.5 yrs
S8	F	31	0 yrs	4 mns	9 yrs
S9	F	54	0 yrs	1 yr	4 yrs
S10	F	66	0 yrs	1.5 yrs	3 yrs
S2	F	47	0 yrs	2 yrs	5 yrs
S4	F	38	0 yrs	3 yrs	9 yrs
S6	F	24	2 yrs	1 yr	2 yrs
S5	F	32	2 yrs	1 yr	2 yrs
V2	F	64	2 yrs (Chinese)	2 yrs	8 yrs
V4	F	43	3 yrs	0.5 yr	13 yrs
V3	F	31	3 yrs	4 yrs	12 yrs
S1	M	26	4 yrs	none	1 yr
V5	M	34	4 yrs+1 yr (Chinese)	0.5 yr	0.75 yr
V7	M	53	5 yrs	0.5 yr	3 yrs
S7	F	30	5 yrs	1.5 yrs	9 yrs

Somali and Vietnamese also share several linguistic characteristics (for Somali see Heine & Nurse, 2000; for Vietnamese Hoa, 1965). Neither allows consonant clusters (Vietnamese orthography can obscure this fact: <tr> is not a cluster, but a voiceless stop), and both allow final singletons. Somali has geminates and allows medial consonant sequences. Lexical tone exists in both, but is pervasive in Vietnamese where words are also primarily monosyllabic. Syntactically, Somali is a consistently head-final language, while Vietnamese is head-initial.

¹¹ V2 may well have been exposed to Pinyin in its role in kick starting the learning of Chinese characters. In this respect, she would be similar to those studied by Read *et al.* (1986) who exhibited phonemic awareness even after years of non-use of Pinyin.

4.2 The Test Battery

Table 4 provides an overview of the tasks in our battery. To measure reading and writing skills, we used a combination of tests designed for this adult population. For phonological awareness testing, we drew on the two studies described in Section 2.2, and together with bilingual interpreters, we created Somali and Vietnamese versions of these tests. To measure linguistic competence, we relied on procedures commonly used to elicit production data.

Table 4: The test battery

	Tasks in native language	Tasks in English
Literacy	<ul style="list-style-type: none"> - read part of a story - write personal details (to confirm schooling) 	<ul style="list-style-type: none"> - read 12 varied single letter identification - read 4 survival signs - fill in 6 blanks (multiple choice) - read a paragraph - read 10 isolated words from spoken lexicon - write personal details
Awareness	<ul style="list-style-type: none"> - word: repeat 25 words in a story - syllable: count syllables of 21 words Somali: salomonka - rhyme: 12 sets odd-one-out Somali: albaab hab <u>dam</u> anab - onset/alliteration: 12 sets odd-one-out Vietnamese: danh dung do <u>cao</u> - phoneme: 12 words segment removal Somali: first sound: <u>sh</u>ay ay last sound: kari<u>n</u> kari middle: al<u>ba</u>ab alaab 	<ul style="list-style-type: none"> - word: repeat 25 words in a story - syllable: count syllables of 21 words English: supermarket - rhyme: 12 sets odd-one-out English: car jar <u>fan</u> star - onset/alliteration: 12 sets odd-one-out English: cage cup <u>sun</u> cow - phoneme: 12 words segment removal English: first sound: <u>b</u>room-room last sound: for<u>k</u> - for middle sound: <u>f</u>rog fog
Linguistic competence		<ul style="list-style-type: none"> - morpho-syntax describe a photograph (of an accident) for five minutes - syllables: name 19 depicted objects (10 w/onset and 11 w/coda clusters) - segments: name objects in a set of 16 pictures with non-NL contrasts

4.2.1. Tests and Testing Procedures

With the exception of the reading tests, testing was entirely aural/oral, with the assistance of a bilingual interpreter. S/he also interpreted the participation agreement and the background information questionnaire, which yielded the information shown in

Table 3. After collecting this information, we next sought to determine whether the learner could actually read or write in Somali/Vietnamese by asking her/him to read the first few lines of the story used for the word awareness task, and then to write basic personal details and if possible a bit more about life in Seattle. The English reading component, which was administered last, comprised a set of tests adapted from other tests to measure a range of basic reading sub-skills. From the Woodcock Johnson Revised (1989) test, we borrowed the idea of presenting letters of the alphabet unordered and in different fonts. We slightly adapted the ESL BEST Form B to test learners' survival sign/environmental print reading. From the Spokane Community Colleges ESL Literacy Level assessment, we adopted a fill-in-the-blank multiple choice sentence completion task. For paragraph reading, we used the English version of the word awareness story. To assess decoding skills, we asked learners to read a list of ten high and low-frequency mono- and multi-syllabic words they would have been exposed to in their daily lives, ranging from high frequency words such as *table* and *community* to lower frequency (but nonetheless survival words) such *penicillin*. Lower-frequency words were included based on the assumption that these would not be part of low-literacy ESL students' sight word repertoires and would therefore reveal whether learners possessed decoding skills. Reading comprehension was not measured given our focus on phonological awareness and basic reading skills.

After the native language reading/writing test, the interpreters assisted in the administration of the native language versions of the phonological awareness tasks. Carrying out the first half of the test battery in the learner's native language not only reduced the learner's anxiety, but also increased the learner's grasp of the testing procedures. Several additional factors were considered in the administration of these tasks, the most central of which was time. Three hours was the most these adults could spare, and token number was adjusted accordingly on those tasks we anticipated would be time-consuming. Next administered were the English phonological awareness tests, identical versions of which learners had just taken in their native languages. For the word awareness task, we did not use Karmiloff-Smith *et al.*'s (1996) original story, but rather constructed a story using topics familiar to adult immigrants in Seattle, with simple syntax, a restricted lexicon and slightly fewer target words. As noted in Section 2.2., they found no significant difference between children's successful repetition of content vs. function words. However, roughly half of the words in this test (14 of the 25 for the English version) were function words due to the expectation that the linguistic competence of some of the adults in our study might be at stages where functional morphology is absent or sparse. 25 pauses were inserted after every 15th to 20th word, after which the experimenter asked the learner to repeat the last word s/he had read.

The syllable counting task involved 21 two-, three- four- and five-syllable words in the English and Somali versions (no Vietnamese version was used due to the mono-syllabic nature of Vietnamese words). In both versions, these were actual words, and in the English version, nine of these were high frequency, familiar words such as *supermarket*, and 12 were low frequency words such as *magnitude* and *chaos* (therefore treated by learners as nonsense words).

The English versions of the rhyme and onset 'odd-one-out' tasks and the phoneme deletion/segment removal task used the same 12 sets of words Burt *et al.* used. For the rhymes, all four words in each set were mono-syllabic with VC or V rhymes. For the onsets, eight of these sets involved mono-syllabic words, two sets used words with two syllables and two sets words with three syllables. The words were those high frequency

words assumed to be in the lexicon of three- to five-year-olds. Although this assumption might not hold for our adult sample, we found no alternative but to use the same words given the lack of a ready description of the words the typical low-literate/low-level adult L2 learner knows. The phoneme deletion task involved four words with coda clusters from which learners had to remove the final segment to create a real word and eight words with onset clusters, from half of which the first segment could be removed to create an actual word and half of which the second segment could be removed to create a word. These words were not from Burt *et al.*; we chose these based on the parameters that both the original and the created words were real, high-frequency words.

Morpho-syntax data were obtained using a now standard technique to elicit spontaneous oral production: picture description. The phonology tasks also involved pictures where only naming was required. As is common in the study of L2 phonology (Young-Scholten & Archibald, 2000), we elicited oral production for onset and coda data. Although we also administered a picture pointing task to measure these adults' ability to aurally discriminate phonemes, the validity of results from this task is questionable. To demonstrate their ability to discriminate between /p/ and /b/ (a distinction non-existent in Somali and Vietnamese), learners had to point to a picture of a *cop* in an array that showed a policeman along with a corn *cob* and a distracter. In administering the test, it was evident that learners did not know these words or indeed a good many of the nouns which were used in this minimal pair discrimination task. We were therefore forced to rely only on the production task to draw conclusions about phonological competence.

4.3. Data Analysis

Before discussing our results, we detail our data analysis where it differs from Karmiloff-Smith *et al.*/Burt *et al.* Reading can be seen to develop in stages (Ehri, 1994).

4.3.1. Reading Levels/Stages

Table 5 : Reading level scoring, based on % correct on English reading tests

Level	Varied single letter identification	Survival signs	Fill-in-blanks	Paragraph reading	Decoding of familiar words in isolation
1	75% +	25%+	0%	no ability	0%
2	75% +	75%+	20%	attempt, w/guessing	20%+
3	100%	100%	20%	slow, sometimes accurate	20%+
4	100%	100%	80%+	halting, mostly accurate	60%+
5	100%	100%	100%	fluent	100%

Based on their performance on the five reading sub-tests for English shown in Table 4, we placed each learner at the implicational reading levels or stages shown in Table 5. All learners scored highly on varied single letter identification; scores below 100% were due to native-language-phonology-based confusion of <p> and . Next-highest scoring

was the survival/environmental sign task, followed by fill-in-the-blanks, paragraph reading and finally, decoding. We assumed that when a learner scored 100% in decoding, s/he was drawing on sight word knowledge, guessing from context and using emerging or transferred decoding skills to tackle the fill-in-the-blanks and paragraph reading tasks.

4.3.2 L2 Linguistic Competence

Dating back to Brown (1973) for L1 acquisition and to Bailey *et al.* (1974) for L2 acquisition is the idea that inflectional morphemes emerge in a predictable order, as shown by learners' oral production in obligatory contexts. Subsequent studies have pointed to the need to consider the overall production of functional morphology and, more importantly, the associated syntax. Disagreement on details notwithstanding (see White, 2003), there is a general consensus that adult L2 learners' non-target morpho-syntax is systematic. A range of studies on the acquisition of English and related languages supports the order of emergence of inflectional morphology and syntax (regardless of learner's exposure type, education, background and to a great extent, native language (Hawkins, 2001; Young-Scholten, Ijuin & Vainikka, 2005). The five Organic Grammar stages (starting with a stage where the L1 exerts its only influence) in Table 6 translate into five proficiency levels at which we placed the learners of our study.¹²

Table 6: Organic Grammar stages (= levels) of morpho-syntactic development in English

Level	Word order in declaratives	Types of verbs	Agreement and tense	Pronouns	Questions and clauses
1	L1 word order	thematic verbs only	none	absent	None
2	L2 word order	copula 'is' appears	none	some pronouns	Qs formulaic or intonation
3	L2 word order	copula forms beyond 'is'; modals emerge	none	new forms; but not obligatory	Qs w/o inversion; coordination
4	L2 word order	auxiliary 'be' forms emerge	tense, aspect; agreement for 'be' forms	pronouns obligatory, and 'it' 'there' emerge	Qs may lack inversion; simple subordination
5	L2 word order	all complex	additional forms; passive forms	'it' and 'there' productive	inverted Qs; complex subordination

To provide data for their placement at one of the levels shown in Table 6, learners were required to talk for five minutes about a photograph which showed a bystander and a stopped car, its driver looking down at an unconscious boy lying on the ground with his bicycle. As shown in (1), this picture prompt served to elicit a range of

¹²The idea of such implicational stages is similar to Crystal *et al.*'s (1976) and Scarborough's (1990) in first language acquisition, and to Pienemann *et al.*'s (1988) in second language acquisition.

constructions. Learners who produced only single-word utterances were placed at Level 1. Their spontaneous utterances during the two or more hours the experimenter spent with them confirmed the conclusion that they were at this level or below. It is possible that given more time and a more relaxed, communicative setting, they would have produced two-word utterances with both nouns and verbs as well as longer utterances; we suspect the former would demonstrate native language declarative word order and the latter the formulaic chunks discussed in Myles (2005).

- (1)
- | | |
|--|---|
| Stage 1: L1 order/thematic verbs | Car. Bicycle. One boy. |
| Stage 2: Thematic verbs; copula <i>is</i> | You my car hit here teacher.
This is car. |
| Stage 3: New functional morphology
coordination | The woman is cry.
Someone's die because he have accident. |
| Stage 4: Subordination emerges | Car hit the kid that's lie down on the street. |
| Stage 5: Nearly target-like | The young boy was having fun with his bike.
He doesn't did that. |

In our study, the assessment of phonological competence in an L2 involved the straightforward comparison of the learner's production of non-target onsets, codas and segments with required target language forms. With respect to vocabulary, we were unaware of an appropriate test. We attempted to test vocabulary, given Alderson's (2000) observation that a 5,000-word vocabulary is required for basic reading – whether in an L1 or an L2. Standardized instruments that do not require reading such as the native-speaker-validated Peabody Picture Vocabulary Test are unlikely to accurately tap the word knowledge of immigrant adults. On the other hand, tests designed to measure adult L2 learners' vocabulary typically assume secondary education and are in written form. We opted to administer the lowest level of Meara's (1992) instrument to determine whether our learners had a core vocabulary of 2,000 words required for understanding what is heard/read in predictable situations. Unfortunately, two necessary alterations made in the instrument - shortening and oral administration - rendered the results invalid.

5 Results

5.1 Overall Individual Performance

Table 7 repeats in a more condensed form the background information on the learners in the study (cf. Table 3), again arranged by amount of native language (NL) schooling, showing these individuals' ESL participation and length of US residence (LoR) together with their performance on selected components of the test battery. The eight learners without any native language schooling are followed by V2, whose exposure during schooling was only to logographic Chinese. Scores only on the English language test

versions are given here. For the unschooled learners, performance on the Somali / Vietnamese versions of the tasks was highly variable and often worse than their performance on the English language versions, suggesting that they were still grappling with understanding the testing procedures at the start of the testing session. The schooled learners' performance on the native language versions of the tasks was, however, comparable to their performance on the English language versions.

In addition to showing learners' performance only on the English language task versions, scores from some of the tasks have also been combined. The 'phonology' column in Table 7 shows learners' performance on the onset, coda and segment production task combined. A breakdown of their scores shows that the Vietnamese were worse overall in producing both initial and final consonant clusters. They produced target complex onsets 47% of the time, while the Somalis did so 85% of the time. Echoing others' findings (see Young-Scholten & Archibald, 2000), both groups were far better at producing onsets than codas, where Somalis produced codas 51% in a target-like manner but the Vietnamese learners only did so 5% of the time. The 'awareness' column in the table also presents combined scores for the English syllable, rhyme and onset awareness tasks under 'syll'. Scores across the three sub-tasks did not differ appreciably, but where they did – on the phoneme/segment awareness task – these are presented in a separate column ('seg').

Table 7: Overview of learner profile and performance on subtests

	sex/ age	NL school	Years ESL/ LoR *)	Phonology (% target)	Syntax Level	Awareness % correct		Reading level
						Syll	seg	
V1	F 51	0 yrs	1/20	29%	2	51%	0%	1
V6	F 70	0 yrs	0.5/2.5	3%	1	34%	17%	1
S8	F 31	0 yrs	0.33/9	69%	2	61%	8%	1
S9	F 54	0 yrs	0.25/4	56%	2	56%	17%	1
S10	F 66	0 yrs	1.5/3	63%	2	37%	0%	1
S2	F 47	0 yrs	2/5	54%	1	20%	16%	1
S4	F 38	0 yrs	3/9	81%	2	36%	0%	2
S3	M 30	0 yrs	2 wks/2	71%	5	68%	42%	4
V2	F 64	2 Ch.	2/8	25%	1	50%	17%	3
S6	F 24	2 yrs	1/2	76%	2	55%	67%	2
S5	F 32	2 yrs	1/2	63%	1	58%	25%	3
V4	F 43	3 yrs	0.5/13	66%	2	44%	17%	3
V3	F 31	3 yrs	4/12	45%	5	77%	58%	4
S1	M 26	4 yrs	0/1	80%	5	97%	100%	5
V5	M 34	5 yrs	0.5/0.75	50%	1	57%	25%	3
V7	M 53	5 yrs	.5/3	25%	1	73%	50%	3
S7	F 30	5 yrs	1.5/9	73%	3	65%	25%	3

*) LoR = Length of residence in US

ESL course participation – which varies considerably for this group - does not appear to be connected with variation in learners' test performance (although without information on content of instruction and actual hours and regularity of attendance, we

cannot dismiss the possibility of a relationship between ESL participation and achievement; see Condelli, this volume). The table shows that Low Syntax Level scores (1 or 2) are exhibited by all the learners with the lowest Reading Level scores (1 or 2), as well as by seven of the eight unschooled learners. Anecdotal evidence from ESL teachers indicates a population of adult learners who are able to communicate effectively yet who are unable to read. If this is indeed so, learners' oral fluency may well be the result of their high use of memorized chunks and stock phrases (Myles, 2005) and a communication system along the lines of Klein & Perdue's (1997) Basic Variety which masks a morpho-syntactic competence that is simply too low to support the development of reading. The achievements of the 30-year old Somali male (S3), the one unschooled learner with a much higher Reading Level - '4' – can be seen as a consequence of his '5' Syntax Level. His score of 71% on phonological competence measures, 68% on syllable/onset/rhyme awareness tasks and 42% on the segmental awareness task after only two weeks' ESL participation (occurring immediately before he was tested) points to a highly motivated, naturalistic learner of the sort of that certainly ought to be studied in greater numbers.

Table 7 shows that the sole Level 1 readers in the group were those without any schooling, and that their 'seg' awareness is always inferior to their 'syll' awareness, as is the case for nearly all others learners. While Syntax Level and Reading Level scores are on par for the unschooled learners, five of the learners with some native language schooling have lower Syntax Levels than Reading Levels (V2; S5; V4; V5 and V7). This indicates the threshold for morpho-syntactic competence is lower for those who have at least some alphabetic reading skills to transfer. Contrary to predictions based on her schooling in a logographic rather than alphabetic script, V2 does not pattern with the unschooled learners: she is at Level 1 in her morpho-syntactic development, but at Level 3 in reading. However, a reading level of '3' does not indicate she is able to decode, and her score of 17% on segmental awareness task supports the conclusion that she does not possess phonemic awareness. Her schooling appears to have benefited her only to the extent that she understands the process of reading.

5.2 *Phonological Awareness Sub-tests*

The learners in our sample might have been expected to perform better on the native language versions of the sub-tests, but this was not the case. As noted above, native language vs. English language performance revealed no clear trends. Moreover, superior performance in one language vs. the other could not be traced to amount of native language schooling or to ESL classes. Certainly some of the variation observed might be accounted for by individual learners' exposure to specific classroom training in English or in their native language, but we have no information on the actual details of learners' classroom experiences. As already noted, a testing order where administration of the native language versions preceded the English versions seemed to contribute to better performance on the latter, particularly for those less familiar with meta-linguistic tasks, i.e. the unschooled learners.

5.3 *Adults' Development of Phonological Awareness*

Looking first at the word awareness task performance, our learners' scores suggest adult second language learners are operating differently from children: all seven Vietnamese

learners correctly repeated the 11 content words more often than the 14 function words in the task (83% for content words vs. 58% for function words). Seven of the ten Somali learners also followed this trend, with three (S7, S8 and S9) repeating function words more often than content words. Similar to the overall trends noted above, this variation appears to be unrelated to native language and ESL schooling or to reading level and linguistic competence.

Figure 1 shows how our adults compare to children (see Tables 1 and 2 above), in terms of mean scores from each phonological awareness task, from Karmiloff-Smith *et al.* for *word* (function/content words combined) and from Burt *et al.* for *syllable*, *rhyme* and *phoneme* (segment). While there are some differences worth pursuing in future research (the Somalis' superior onset/rhyme vs. syllable awareness), the overall pattern of lagging phonemic awareness and superior word awareness is similar to children's.

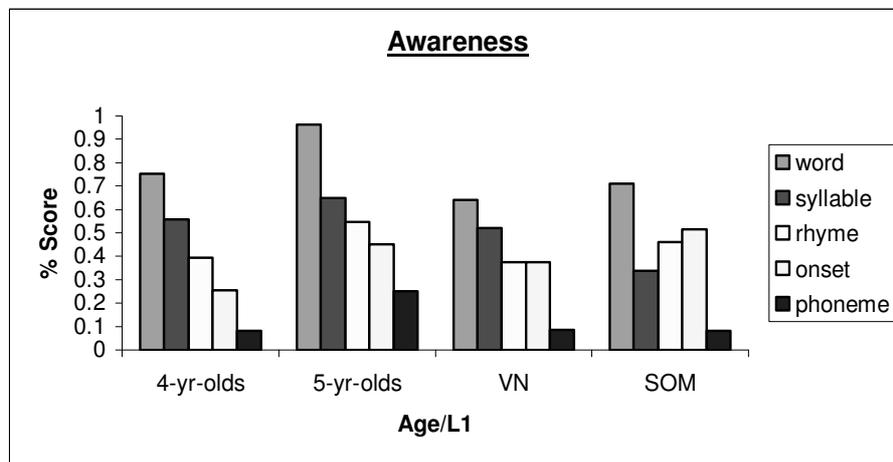


Figure 1: Adult L2 learners in comparison to Karmiloff-Smith *et al.* and Burt *et al.*'s children

5.4. Relationships between Sub-test Scores

Here we further explore relationships between factors discussed above. When we look for correlations between phonemic awareness with isolated word reading (see Table 8), we indeed find a relationship similar to that found for children (Goswami & Bryant, 1990).

Table 8: Phonemic awareness and single word decoding scores (Pearson correlations)

Learners	Correlation	
Vietnamese	0.915	$p < .01$
Somalis	0.881	$p < .01$
Overall	0.886	$p < .01$

Onset/rhyme awareness scores and decoding (single word reading) show slightly weaker correlations, but these are nonetheless significant (see Table 9). As discussed in Section 2, this is expected if onset/rhyme awareness emerges naturally, where all individuals regardless of additional, phonemic awareness display the former, and all those who demonstrate the ability to read have both onset/rhyme and phonemic awareness.

Table 9: *Rime/onset awareness and single word decoding (Pearson correlations)*

Learners	Correlation	
Vietnamese	0.711	p<.05
Somalis	0.746	p<.05
Overall	0.720	p<.01

Table 10 addresses one component of the linguistic threshold, namely, phonological competence. The correlation between onset/coda production and onset/rhyme awareness is significant for the Somalis but not for the Vietnamese (whose numbers are, in any case, lower at seven learners vs. ten learners). A problem not mentioned earlier is the likelihood that the production task and awareness tasks did not measure precisely the same units. The production task looked at final consonant clusters, i.e. only the syllable coda. However, the rhyme awareness task tapped learners' awareness of the entire syllable rhyme, including the vowel(s) preceding final consonants. The need to treat rhyme and coda production and awareness separately is yet another issue for future consideration by researchers.

Table 10: *Onset/coda production and onset/rime awareness (Pearson correlations)*

Learners	Correlation	
Vietnamese	0.538	Ns
Somalis	0.703	p<.05
overall	0.537	p<.05

Looking at the morpho-syntax competence that might be required as a foundation for understanding the phrases and clauses in a text and its relation to reading skills, the correlation calculated between Syntax Level and Reading Level was significant for the Somalis, but not for the Vietnamese, as shown in Table 11. Note that six of the eight unschooled learners were Somalis. In the discussion of the results shown in Table 7, it emerged that the unschooled and schooled learners constitute two separate populations, where Syntax Level only matters for the former, when there are no native language reading skills available to transfer.

Table 11: *Syntax level and reading level (Spearman correlations)*

Learners	Correlation	
Vietnamese	0.714	ns
Somalis	0.915	p<.01
Overall	0.942	p<.00

6 *Discussion*

The results from this small-scale study reveal phonological awareness profiles of low-literate adult readers that are similar to young children's, as well as to the older late-literate native language speaking adults studied by Morais and colleagues. As has been found for children and for late native language readers, there is compelling evidence for the emergence of word, syllable, rhyme and onset awareness prior to the development of reading, and for the emergence of phonemic awareness only with reading. As we have seen, none of the 17 adults in this study demonstrates the ability to read – specifically, to decode – without also displaying phonemic awareness, and none of them display phonemic awareness without also demonstrating the ability to decode. The one learner with only logographic script schooling demonstrates a greater ability to cope with written text than most of the unschooled learners (with a Reading Level of '3'); however, she is also unable to decode and has extremely limited phonemic awareness. For those who immigrated to the USA with some native language schooling, awareness of all five phonological units was likely the result of this schooling, especially since it was in an alphabetic orthography. The variable bidirectional nature of linguistic competence level/score and Reading Level shown in Table 7 for these learners suggests variability in transfer of native language reading skills. Apart from the short native language reading passage learners read to confirm basic native language reading ability, we lack the detailed information on our schooled learners' reading skills and on their schooling that might well account for this variability.

For those adults in the group who provide a direct comparison with young children – the eight unschooled learners – it is not clear to what extent the phonological awareness patterns found are the result of ESL course participation, since all had attended ESL classes for between two weeks and three years. However, it is highly unlikely that all learners were receiving ESL instruction that solely focused on the supra-phonemic units that most of them only displayed awareness of. Morpho-syntactic competence (Syntax Level) turns out to be most clearly connected to unschooled learners' ability to read. And while we find significant correlations between onset/coda production and onset/rhyme awareness, we have noted above one problem with these results. An additional problem is that the production data upon which we have based conclusions regarding learners' phonological competence may under-represent their competence; a comprehension task would reveal whether learners perceive phonemes they cannot produce.¹³ However, as also noted above, it is impossible to construct comprehension tasks for low-level learners whose lexicons are limited (this is not a problem confronting those who work with native-language speaking children). As we have seen, the current state of research on low-literate adult second language learners does not provide many options for the testing of vocabulary in the first place. A measure of these learners' vocabularies would have completed the picture of their linguistic competence to allow comprehensive consideration of the linguistic threshold for L2 reading. As with several other issues already mentioned, this, too must await future research.

We can have confidence in our results to the extent that – despite some problems in data collection and interpretation – they resemble what has been found for children

¹³ The same might be pointed out with respect to the determination of morpho-syntactic competence.

with respect to phonological awareness. The study has also uncovered several ways in which adults appear to differ from the children who have been studied. First, our adult learners patterned differently from children in their repetition of words: they repeated function words at a lower frequency than content words. This is unsurprising when one considers that a low Syntax Level means function words are absent from learners' L2 grammars. That this pattern also held for learners at the highest ('4' and '5') Syntax Levels suggests lack of a straightforward relationship between acquisition of functional elements and the ability to isolate and repeat them from the stream of speech. Our results also show different patterns of awareness for smaller units. With respect to syllables vs. onsets and rhymes, unlike children, the Somali adults demonstrate greater awareness of the latter. In fact, the Vietnamese learners demonstrate greater syllable awareness than the Somalis, an unexpected result given the monosyllabic vs. polysyllabic nature of the two languages. This pattern does not hold for every individual Vietnamese or Somali speaker, indicating additional factors at work, the simplest of which is learners' ability to grasp the demands of a task. A final difference between children and our adult learners is the relationship between alphabet knowledge and reading. Barron (1991, 1994) claims that alphabet letter knowledge rather than decoding ability is what triggers phonemic awareness. Although phonemic awareness exists for those learners in our sample who both know the alphabet and who can decode, we find little evidence for any sort of triggering effect. All 17 adults demonstrated solid knowledge of the alphabet in their ability to read letters in different fonts and out of order, but as we have seen, many demonstrated no phonemic awareness and no decoding ability.

7 Conclusion

Is there a critical period for learning to read? The findings from this small-scale study clearly indicate unschooled adults are fundamentally similar to preschool children in this respect. Indeed it would be odd if the unschooled learners in our sample displayed patterns of awareness and reading skills different from those late literate native language adults studied by Morais and colleagues. Given our conclusion, it is not surprising that one of the eight unschooled adults in our sample had learned to read/decode (S3). It is surprising that he was able to do so without the support of ESL classes. With the rest of his family literate in Somali and/or English, he would have understood what literacy entails and may have been motivated to seek out willing teachers in his family and community.

Adult second language learners do differ from native speaking adults learning to read for the first time. If they have not mastered the phonology, morphology and syntax of their second language when they begin to learn to read, their ability to develop phonological awareness and to decipher text will be compromised. Future research will need to determine precisely how development of these aspects of spoken language – as well as vocabulary – relates to the development of meta-linguistic awareness and reading. It is not clear that the critical period for language acquisition is a contributing factor. S3 clearly developed sufficient linguistic competence to support reading. One might be tempted to conclude that the critical period for acquisition of spoken language accounts for the slow linguistic progress of the rest of the unschooled adults, yet limited exposure to English is a far more likely cause (Moyer 2004).

To examine the factors we have considered in more depth, a longitudinal study is required, where phonological awareness is tested in both languages prior to and during reading instruction. Such a study would allow the more rigorous examination of the relationship between various components of linguistic competence and reading.

As is the case for young children, the development of literacy in English by first-time adult readers requires considerable resources. Learning to read is not the only challenge facing low-literate adult immigrants. Many adults with no formal schooling are refugees from war-torn, non-industrialized societies who upon arrival in the USA must juggle ESL classes with family responsibilities and work. Our study of 17 Vietnamese and Somali adults points to the conclusion that with sufficient time and effort, even adults without any native language schooling can become literate in English.

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DISCOVERING FEATURES OF LANGUAGE: METALINGUISTIC AWARENESS OF ADULT ILLITERATES

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1 Introduction

What do illiterate adults know about writing and language? Can they recognize environmental print? How do they think about the representational nature of writing? How would they judge word length? Do they know where in a spoken sentence one word ends and the next begins or that the word *cat* is made up of three speech sounds? Those questions arose after we had been researching the acquisition of reading and writing in a second language of adult illiterates and had been observing the students for about a year (Kurvers & Van der Zouw, 1990). Many observations seemed to suggest that the concepts on language and literacy teachers brought to the classroom often did not match with what the illiterates were thinking. In answering questions about a story they just had been reading, the beginning readers often used their own experience, and not the text. In copying written words, they seemed to use incidental features instead of the distinctive features the teachers were looking at. And in talking about language, words like 'empty' or 'hole' confused them, because they could not understand how something could be a word, "when there is nothing".

Many studies around these and other questions have been carried out among pre-reading young children (Teale & Sulzby, 1987; Adams, 1990; Gombert, 1992; Tolchinsky, 2004), but only a few were focused on illiterate adults. Most studies in which 'illiterate' adults were involved focused on adults in Western countries who went to school as children but did not learn to read properly (cf. Hunter & Harman, 1979; Scholes, 1993; Barton, 1995) or on illiterates in more or less oral societies (Luria, 1976; Scribner & Cole, 1981).

Illiterate adults in Western countries who never attended school are seldom investigated, although many have been living in advanced literate communities for a long time. Since young children's evolving knowledge of writing and language prior to being taught formally to read and write has been explored in many studies, one wonders why so little is known about the language conceptions of illiterate adults. Except for their phonemic awareness (cf. Gombert, 1992; Morais & Kolinsky, 1995, 2004), hardly anything is known about their emergent literacy or metalinguistic awareness. Research on the language awareness of illiterate adults is scarce; moreover, hardly any investigation has been carried out in which the awareness of the two groups of non-readers (young children and illiterate adults) was compared in a direct way. We

examined illiterate adults by investigating their awareness of print and language. In this contribution, we only present some outcomes on language awareness.¹⁴

1.1 *Metalinguistic Awareness*

Metalinguistic abilities can be described as ways of conscious reflection on, and analysis and internal control of, different aspects of language, apart from the unconscious processes of understanding and production of language (Gombert, 1992, 1997; Karmiloff-Smith *et al.*, 1996; Tunmer, 1997). The term metalinguistic is used to cover a range of linguistic skills, such as segmenting words into syllables or phonemes, phoneme manipulation, segmenting sentences into words, separating words from their referents, or judging rhyme or syntactic properties of sentences. Phonological awareness refers to the ability to manipulate sub-lexical units like onset-rhyme, syllables, or phonemes. Lexical/semantic awareness refers to the ability to separate language forms from their meaning and to segment sentences along word boundaries. Syntactic awareness refers to the competence to judge the grammaticality of sentences or to explain or correct grammatical errors. Some authors also call syllogisms metalinguistic tasks, since solving a syllogism requires an explication of the meaning relationships between different sentences (Scribner & Cole, 1981; Ong, 1982; Olson, 1994).

We do not know much about illiterates' language awareness and their knowledge of structural features of language. There is one exception, however. It has been shown convincingly that illiterate adults, like young children, perform poorly in segmenting words into phonemes (Morais *et al.*, 1986; Bertelson *et al.*, 1989; Scholes & Willis, 1991; Prakash *et al.*, 1993; Gombert, 1994; Adrian *et al.*, 1995; Lukatela *et al.*, 1995). In all studies, illiterates differed significantly from readers in every phoneme manipulation task, such as phoneme segmentation, and phoneme deletion or addition. Differences in other phonological tasks like phoneme discrimination, rhyme judgment, or syllable manipulation turned out to be much smaller.

It seems to be presumed that adults in general share basic forms of language knowledge. Adults know where in a sentence one word ends and the next begins, and they know that a word is not the same as the referent, that a word like 'housekeeper' is composed of different parts, and that words like 'they all' in discourse refer to a group of people. Scribner & Cole (1981) found no consistent effect of literacy on the ability of different groups in Liberia to differentiate between words and referents, or to judge word length. This finding is partly confirmed by other research on adults, but not by all. Hamilton and Barton (1983, see also Barton, 1985) did not find any significant differences between three groups of adults of three different reading ages in word judgment and marking word boundaries in spoken sentences. Kolinsky *et al.* (1987) found significant differences between illiterate and literate adults in judging word length. Moreover, Gombert (1994) found that illiterate adults could not mark word boundaries in spoken sentences, but this result might be confounded by the fact that the participants' knowledge was judged in their second language.

On other levels of lexical/semantic awareness, studies of adult illiterates produced different outcomes. Both Luria (1976) and Scribner & Cole (1981) compared how literates and illiterates solved syllogisms. Luria found systematic and significant

¹⁴ This forms part of a larger study in which also the daily experiences with written language were investigated, and the illiterates' concepts of forms and functions of writing.

differences when the illiterates were compared with literates who had been to school for only three years. The former group systematically used their own experiences in solving the syllogism (*I have never been to England; So how can I know if cotton grows there*), while the literates used deductive reasoning based on the premises. On the other hand, Scribner and Cole (1981) found an effect of schooling: the literates who had been to school for more than eight years were significantly better at solving the syllogism than both the illiterates and literates who had learned to read without formal schooling.

Much is known however about young children's developing awareness of structural features of language (Sinclair *et al.*; 1978; Valtin, 1984; Yaden, 1986; Gombert, 1992). As far as metaphonological knowledge in the broad sense (see also Geudes, this volume) is concerned, the overwhelming outcome of many studies is that children who cannot read and write have difficulties in manipulating phonemes in words, while abilities like rhyming or manipulation of syllables are easier to handle, even for pre-readers (Bertelson, 1986; Goswami & Bryant, 1990; Adams, 1990; Gombert, 1992; Demont & Gombert, 1996; Byrne, 1998; Troia, 1999; Murray, Smith, & Murray, 2000). The outcomes of developmental lexical/semantic studies are more diffuse. Chaney (1989) and Karmiloff-Smith *et al.* (1996), for example, found that children as young as four or five years old had no real problems in marking word boundaries in ongoing narratives, while other studies report that children under age six have serious problems in isolating words in sentences (Ehri, 1975; 1979; Bowey & Tunmer, 1984; Gombert, 1992; Roberts, 1992; Homer & Olson, 1999; Edwards & Kirkpatrick, 1999; Kurvers & Uri, 2006).

In developmental studies with young children, often a sudden growth in phonemic and lexical awareness has been observed between roughly the ages of five and eight. Different explanations are brought forward for this sudden growth in metalinguistic abilities in different language domains of young children: (1) language development, (2) cognitive development, or (3) literacy as explanatory models (Watson, 1984; Tunmer, Herriman, & Nesdale, 1988; Dreher & Zenge, 1990; Francis, 1999). The first two models can be subsumed under the heading of developmental hypotheses; the last model can be distinguished under the heading of literacy hypothesis.

The metalinguistic knowledge of illiterate adults constitutes an excellent case for testing those contrasting hypotheses, because, unlike young children, illiterate adults are experienced users of language, and, like young children, they have not had any systematic introduction to written language. If metalinguistic knowledge is a direct consequence of development, no large differences in metalinguistic abilities between adult illiterates and low-educated adult readers are expected to be found, while differences between young children and adults are expected. On the contrary, the claim that explicit knowledge about structural units of language is a consequence of systematic introduction to the writing system predicts systematic differences between literate and illiterate adults, and much smaller differences between younger and older non-readers. Maturation hypotheses predict major differences between young children and adults (irrespective of their literacy skills). Literacy hypotheses predict major differences between readers and non-readers (irrespective of their age).

So, our research question was: What do illiterate adults know about the structural features of the language they understand and speak, compared with young children who can not yet read and with literate but low-educated adults? The literacy hypothesis

predicts differences between readers and non-readers, irrespective of age. The developmental hypotheses predict differences between children and adults, irrespective of literacy skills.

2 Method

2.1 Participants

The target subjects were illiterate adults, and the two reference groups were children with similar ethnic and social backgrounds just before entering first grade and literate adults with similar ethnic and social backgrounds who had no more than six years of primary education. Since almost all native adults in highly literate societies who cannot read or write have a history of formal education, albeit unsuccessful, illiterate adult migrants, who had just entered adult literacy classes, were selected. Those illiterate adults were selected who had less than two years of primary education and could not read simple monosyllabic words they had not learned beforehand. Literate adults were defined as able to read and write a simple text (either in their mother tongue or second language) and having no more than six years of primary education. The children selected were in the last term of pre-school, had not been in pre-school for more than three years, and were to go to first grade in the next school year. All samples started with 28 participants in each group. Between three and five subjects in each group dropped out, owing to external circumstances, like moving house or childbirth. The three groups of participants and the distribution over ethnic origins are presented in Table 1.

Table 1: Participants by research group and ethnicity

Ethnic group	Children	Illiterate adults	Literate adults
Moroccan	14	14	11
Turkish	3	3	5
Somali	3	6	3
Other	4	2	4
Total	24	25	23

All participants came from medium-sized cities in the southern part of the Netherlands. The children were attending the last term of pre-school, all schools being so-called 'black' schools, which means that at least 60% of the school population had an immigrant background. The adults took part in adult literacy classes (illiterates) or participated in classes in Dutch as a second language (literate), in the same neighborhoods as where the schools of the children were located.

Of the 14 illiterate Moroccan adults, eleven had Tarifit, one of the Berber languages, as their mother tongue, and three Moroccan Arabic; of the literate Moroccans, six were Tarifit speakers and five were Moroccan-Arabic. Of the Moroccan children, seven had Tarifit as their home language. All Somalis had Somali as their home language, and all Turks Turkish.¹⁵ The other participants were mainly children and adults from the

¹⁵ Both Tarifit and Somali belong to the Afro-Asiatic languages, Somali to the Cushitic branch, Tarifit is one of the Northern Berber languages. Both languages have, compared to English, a

former Dutch colonies of Surinam and Curaçao, and spoke both Sranan Tongo (Surinam) or Papiamentu (Curaçao) and Dutch at home. The mean age of the children was 6.4 years, with a range from 5 to 7. To be sure that the differences between the two groups of adults would not be caused by unintended differences in their background (which might also explain the difference between being literate and illiterate), additional background data were gathered and checked. In both groups, the majority of the participants were women (19 in both groups); the difference was not significant (chi-square = 0.32, $df=1$, n.s.). In both groups, about half of the participants came from villages and the other half from smaller or larger towns (chi-square = 0.09, $df=1$, n.s.). Of the 25 illiterates, 15 lived with a partner and children in a one-family home and the others with a partner, with children, alone, or with parents; of the literates, 12 of the 23 lived with a partner and children in a one-family home (chi-square = 0.38, $df=1$, n.s.). Twenty-two of the 25 illiterates were unemployed, while 17 of the 23 literates were unemployed (chi-square = 3.68, $df=1$, n.s.).

The mean age of the illiterates was 38, ranging from 15 to 57, and the mean age of the literates was 34, ranging from 17 to 55. There was no difference between the groups in mean length of residence of the participants or their partners; in both groups, this ranged from less than a year to more than 20 years. Of the 25 illiterate adults, 19 had never been to school as children, whereas six had attended primary school for less than two years; the literate adults had attended primary school for about four years and a half, ranging from two to six years of schooling ($t=-13.22$, $df=1$, $p<0.01$).

All except for one illiterate and two literate adults used mainly their mother tongue at home; the difference between the groups was not significant (chi-square = 0.23, $df=1$, n.s.). Nearly all adults preferred to speak their mother tongue (no difference between the two groups; chi-square = 0.43, $df=1$, n.s.). All literate and 20 illiterate adults reported some knowledge of another language, mostly Arabic or Dutch (“I can understand Dutch, but I can not talk back”). All except two literates attended Dutch (second-) language classes, while four literates had had some years of primary education in Dutch schools.

Except for the deliberately intended difference in years of primary schooling, there were hardly any differences in background data between the two groups of adults. The illiterate adults had all started literacy classes in Dutch as a second language. The number of hours they had already attended these classes at the moments of testing ranged from about 20 hours to about 200 hours: for each class about 4-6 hours a week. All literacy classes in Dutch as a second language start with a basic program in oral Dutch and some preparatory exercises; no one had actually learned to decode during that period.

Before the test sessions started, some visits were made to the classes and in-depth interviews were carried out with the illiterate adults, in which they talked about their own personal histories and their experiences with writing and language. Except for the few illiterate adults who had attended primary school for about one year, the illiterate adults did not have much exposure to print as children. A few remembered looking at what their siblings (mostly brothers) were reading, and being curious to find out what they were doing. All participants knew somebody who was able to read letters to them,

rich morphology. The agglutinating Turkish belongs to the Southern Turkic branch of Altaic languages. The basic word order is VSO/SVO for Tarifit, and SOV for Somali and Turkish.

in almost all cases a relative or neighbor, and two illiterate adults remembered the postman reading letters to their families. Except for one widowed woman, all illiterate adults had at least one reader/writer in their direct environment, mostly their partner or one or more of their children. Almost all illiterate adults had a fairly good idea of the functions and uses of literacy (Heath, 1983). They knew the purpose of a newspaper, they knew about subscriptions to television, they knew the uses of bills and billboards, and most of them knew the working of a calendar, agenda, or phonebook, although most did not and could not use these tools themselves. They knew they had insurance cards and identification cards, although many did not know where to look for specific information. All except five illiterate adults could write their first names, and fewer than half of them their surnames or addresses as well. In talking about reading, they all made a clear distinction between looking and reading (“I can look at the newspaper, but I still do not know what it says”); the difference between learning to read and learning a (second) language, however, was confusing (some assumed they would be able to write letters to friends in Morocco once they had learned to read and write in Dutch). None of them could read simple monosyllabic words they had not already learned.

All illiterate adults were determined to learn to read and write: “Otherwise I will stay like a blind person, who can look at the newspaper, and still do not know what it says” or “You are not a human being if you cannot read.” Most illiterate adults expressed a low level of aspiration for their own future (“Just reading and writing” or “One level up, some more Dutch to answer the phone”), while a few wanted more: “Later on, I am going to write a book about my life.” “Why later? Why not now?” the teacher asked. “Right now, I do not have enough letters.”

2.1 Materials

Several test instruments were used to investigate metalinguistic awareness. Table 2 gives an overview of these instruments, together with a preliminary analysis of their internal consistency (Cronbach’s alpha).

Table 2: Overview of test instruments, the number of items (k), and the internal consistency of the test instruments (Cronbach’s alpha)

Language level	Instruments	Number of items	Cronbach’s alpha
Phonological	Rhyme production	12	0.91
	Rhyme judgment	14	0.71
	Word segmentation	6	0.87
Lexical/semantic	Word/referent differentiation	3	0.87
	Word length judgment	10	0.76
	Word judgment	18	0.70
	Sentence segmentation	3	0.86
Textual	Syllogisms	5	0.84

Rhyme Production

After four examples were given with corrective feedback, 12 test items were presented orally. The participants were asked to react with a rhyming word, as in the examples. To

prevent word-finding problems from occurring, only those items were selected in the different languages that triggered several high-frequency words as a correct answer. Both monosyllabic and bi-syllabic words were used.

Rhyme Judgment

The rhyme-judgment task consisted of 14 orally presented pairs of words. The participants were asked to judge whether or not the words rhymed. Four examples were given before the task started. Six pairs consisted of rhyming words; in six other items, the words were semantically related (husband-wife); and in one item only the vowels were different. The participants were asked to explain their answers.

Word Segmentation

This task was part of the progressive segmentation task; see under progressive segmentation for further information.

Word / Referent Differentiation

To test the meta-semantic knowledge of the participants, a picture of a cat and a dog was presented and it was suggested to change the names. The participants were asked to answer a few questions about properties of the animals with the changed names (*What noise does the animal make that is called 'dog' now?*) and to explain their answers.

Word-length-judgment.

To test the participants' ability to judge words based on formal features only, 12 word pairs were presented orally and the participants were required to choose the longest word. Five items consisted of congruent pairs, meaning that the longest word corresponded to the largest object (*geit-olifant* 'goat-elephant'), six consisted of incongruent pairs, in which the longest word corresponded to the smallest object (*slangvogeltje* 'snake-little bird'), two items were neutral in this respect (*vork-lepel*, 'fork-spoon'), and one item consisted of a pair of names with no clear referent (*Margaretha-Leyla*). The difference in word length varied from one to three syllables, while word length varied from one to four syllables.

Word Judgment

The participants were required to judge if a given sound string ('utterance') was a word or not a word, and to explain their judgments. The task consisted of 18 items. The list contained content words (*monkey, book, walking*), different function words (*at, or, the*), word groups (*large trees*), and sentences (*He is reading a book*). Words differed in concreteness (*walking, thinking*), in number (*monkey, houses*), and in word class (*monkey, large, or*). The participants were asked to explain their answers.

Progressive Segmentation

A progressive segmentation task was developed to gain insight into the way the participants segmented spoken utterances. The participants were asked to break an orally presented sentence up 'into pieces' and to tell and demonstrate how many pieces they had. No demonstrations were given of any specific segmentation. The participants were free to choose their own way of segmentation. The first part of the task consisted of three sentences that in each of the languages used consisted of both content words and function words, and of both monosyllabic and polysyllabic words, like *the old man is*

going to the hospital tomorrow. After that, word groups of the formerly used sentences, like *the old man*, were presented again and the participants were asked to segment them into “still smaller pieces”. Next, the same procedure was repeated using polysyllabic words like *hospital* and monosyllabic words like *man* alternately. The task consisted of 12 items, three sentences, three word groups, and four polysyllabic and two monosyllabic words. Since this task concerned both metalexical and metaphonological skills, it is split into *word segmentation* and *sentence segmentation* in the overview (Table 2) and in the analysis of the results.

Syllogisms

To check if the participants were able to solve simple syllogisms, five syllogisms were presented orally and the participants were asked to solve them and to explain their answers. The same syllogisms were used as Scribner & Cole (1981) used in the second part of their research in Liberia, with minor adaptations to the Dutch context (f.e. Amsterdam instead of Monrovia). An example is the following: *All stones on the moon are blue. A man goes to the moon and takes a stone. What color is that stone?* The participants were asked to explain their answers (“How do you know that stone was blue?”)

Linguistically experienced bilinguals translated the tasks into Tarifit, Somali, and Turkish. Some minor adaptations were necessary to assure the comparability and equivalence of the tasks. Since Tarifit does not have a word for *word* like in English, the word *awar* was used, which has the broader meaning of ‘piece of language’ as well, in the sense of ‘saying something’. In the experiments, it was used together with the Dutch word *woord* and the Arabic *kelime*, both of which have the same meaning as the English *word*. Since neither Tarifit nor Somali uses a word for *rhyming* which has the same meaning as the Turkish and Dutch equivalents, the instruction was focused on the examples. Sentences of about the same length with the same formal characteristics were produced in all languages. Minor adaptations were necessary for a few function words and a few prepositions. In the Turkish version, the definite article *de* (= the) was translated as *şu* (= that); in Somali, the Dutch word *op* (= on) was translated as *ka* (multiple meanings like *on, at, near, with, against*). Because Tarifit and Somali do not have as many high-frequency monosyllabic words as Dutch and Turkish, some more items consisted of bisyllabic words in the rhyming task.

The same bilinguals who translated the tasks (and, therefore, were acquainted with the purpose and the wording of the tasks) assisted as interpreters during data collection in the participants’ first languages. The researcher and the interpreter had already visited the classes before data were gathered. Except for two illiterate adults, all those attending the classes agreed to participate in the project, although several illiterate adults wondered why the researcher wanted them to talk about language and writing: “Did you come all the way from the university for us? You better ask my sister-in-law. She went to school and can answer your questions better than I do.”

The tasks were carried out in either the subjects’ mother tongues or Dutch, depending on language dominance and preference. The subjects were asked which language they would prefer, their mother tongue or their second language, Dutch. Some adult participants who had been living in the Netherlands for more than 10 years, chose Dutch (5 illiterates, 11 literate adults). All data were gathered in two or three sessions of about one to one and a half hours, breaks depending mostly on the school timetables.

3 Results

All language awareness tasks were also carried out in either the first or second languages of the participants. Consequently, in a preliminary 3x2 analysis of variance, the main effects of both group (child, illiterate, literate) and language (L1 or L2), and the interaction between group and language were investigated (SPSS 12.0, GLM Univariate Analysis, model III). The idea was that if a significant main effect of language was found, and no effect of group, the results would only be presented for the mother tongues of participants, since our aim was not to measure command of a second language. This turned out to be the case only for the word judgment tasks ($F_{1,62}=9.29$, $p<0.05$). In all other cases, the outcomes could be aggregated over languages. Table 3 gives an overview of all language awareness tasks, split up into phonological and lexical/semantic and textual tasks.

Table 3: Means and standard deviations of language-awareness tasks per group and the statistical outcomes (F ratio)

		Children (N=24)		Illiterate adults (N=25)		Literate adults (N=23)		df	F-ratio
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Phono- logical	Rhyme production (range 0-12)	8.74	3.33	2.13	2.77	6.57	3.33	2,64	27.02**
	Rhyme judgment (range 0-14)	10.78	2.88	9.96	2.28	11.36	2.54	2,64	1.77
	Word segmentation (range 0-6)	4.24	1.73	1.65	2.12	3.73	2.30	2,60	10.17**
Lexical/ semantic	Word referent (range 0-3)	1.63	0.89	0.50	0.83	1.29	1.40	2,51	6.18**
	Word length (range 0-10)	7.23	1.80	6.79	2.11	8.91	1.53	2,63	8.68**
	Word judgment L1 (range 0-18)	12.29	1.98	13.0	2.17	15.55	1.81	2,35	7.30**
	Sentence segmentation (range 0-3)	0.19	0.40	0.09	0.28	2.14	1.13	2,61	60.05**
Textual	Syllogisms (range 0-5)	1.65	1.66	0.92	1.27	3.35	1.81	2,56	13.73**

$p<0.05$, ** $p<0.01$

For all but one task, the main effects of group were significant. The only exception was rhyme judgment, in which the mean scores of the groups did not differ significantly. In two of the three phonological tasks, the mean scores of the children were higher than those of the adults, while in most other tasks the scores of the adult literates were higher

than those of both groups of non-readers. We discuss these results more thoroughly below, and separately for the phonological and lexical/semantic tasks.

In Table 4, the outcomes of the post hoc analyses (Tukey HSD) are reported in order to demonstrate the differences per pair of groups. No results are given for rhyme judgment, because no overall group effect was found here (see Table 4).

Table 4: *Pairwise comparisons of language awareness (Post hoc Tukey HSD)*

Task		Child vs. Illiterate	Illiterate vs. Literate	Child vs. Literate
Phonological	Rhyme production	**	**	ns
	Word segmentation (all sublexical levels)	**	**	ns
	Word segmentation (phonemic level)	ns	**	**
Lexical/semantic	Word-referent differentiation	*	*	ns
	Word length	ns	**	**
	Word judgment (L1)	ns	**	**
Textual	Sentence segmentation	ns	**	**
	Syllogisms	ns	**	**

* $p < 0.05$; ** $p < 0.01$

As can be seen in Table 4, the illiterate adults differed significantly from the literate adults in all language awareness tasks that revealed group differences. The children differed from the literates in nearly all lexical/semantic tasks but not in the phonological task, except for phonemic segmentation. They were as good as the literates in rhyme production, and like the literates they succeeded in sub-lexical segmentation, although nearly all children segmented along syllables. The children did not differ from the illiterate adults in most of the lexical/semantic tasks, but they did differ from the illiterates in rhyme production and sub-lexical segmentation, and in word-referent differentiation.

3.1 *Phonological Awareness*

It can be seen in Table 3 that the children had the highest scores in two of the three phonological tasks, and that the scores of the illiterates were low compared to those of both the children and the literate adults. Analysis of variance returned significant differences among the groups in every task, the largest difference being for the rhyme-production task.

Rhyme Production.

Table 3 shows that most children were fairly good at rhyming, while most illiterate adults were bad at it. Post hoc analysis (Tukey HSD) revealed that the illiterate adults differed significantly from both the preschoolers and the literate adults ($p < 0.01$), while the difference between children and adult readers was not significant. Both children and adult readers produced a rhyming word for more than half of the items. Further analysis showed that the children often reacted with a pseudo-word in the rhyming task

(33.5% of all responses), and the adults much less so (6.8% of the rhyming reactions of the illiterates and 13.5% of those of the literates); adults more often reacted with an existing word. Most children did not hesitate either; they immediately came up with a rhyming word, while the more literate adults took some time to think about a word that fitted the criteria. The non-rhyming responses were further categorized as 'alliteration' (like *moos-mir* or *asinu-asia*), meaning association (like *hair-comb* or *costs-a lot*), or some other reaction (like repeating a word). All types of responses were found in all groups. Adults seemed to prefer alliteration (44.3% of the errors of the illiterates and 54% of those of the literates) and, to a lesser degree, meaning association (especially the illiterates, with 33% of the error responses). The most frequent error responses of children who did not rhyme belonged to another type, like repeating the word (44% of the error responses).

Rhyme Judgment.

The differences between the three groups were much smaller when it came to rhyme judgment. There was no difference between the groups in how well a pair of words was judged as either rhyming or non-rhyming. The scores of all three groups were significantly above chance level. Rhyme judgment was easier than rhyme production, especially for the illiterates. A 3x2 analysis of variance was carried out with group as between-subjects factor, and type (rhyming pairs versus meaning pairs) as within-subject factor. There was a significant effect of type ($F_{1,67}=37.04$, $p=0.000$) but no interaction between group and type ($F_{2,67}=0.12$, $p=0.89$). It was easier for all groups to judge two rhyming words as rhyming than to conclude that two words that were close in meaning did not rhyme.

Word Segmentation.

For the first analysis of word segmentation, the responses to both polysyllabic and monosyllabic words were categorized as either sub-lexical segmentation or not (this is the first response shown in Table 3). The number of words segmented somehow into sub-lexical units was much higher for children and literates than for illiterates. Most children were fairly good at segmenting words into sub-lexical entities, while most illiterates did not segment words into sub-lexical units at all. The range in scores of both groups of adults was maximal, but the median of the literates was 4, and of the illiterates 0. Post hoc analysis showed that the illiterate adults differed significantly from both other groups, but the children did not differ significantly from the literates.

Subsequent analyses revealed additional differences between non-readers and readers in type of sub-lexical segmentation. While the overwhelming reaction type of the children who did segment sub-lexically was segmentation along syllable boundaries (about 75% of their segmentations), most of the segmentations of the adult readers were phonemic (67% of their responses). In most cases, the illiterates did not segment words into sub-lexical units at all, but when they did they divided the words into syllables. Monosyllabic words were hardly segmented by the non-readers. Six out of the 25 illiterates reacted to the content, and not to the form, as in "Yes, you can divide *tomatoes*, into four parts." The conclusion is that phonemic segmentation is only used by readers, while the syllable seems to be a more natural linguistic unit to use. However, the young children's syllabic segmenting was also caused by the fact that they practiced this in pre-school.

In sum, most of the children and literate adults were good at rhyming, while the illiterate adults were not: they responded with alliteration, or they made associations on the basis of the meanings of the words. Differences between groups were much smaller and not significant when it came to rhyme judgment. The majority of the illiterate adults did not segment words into sub-lexical units, while young children preferred segmentation into syllables and literate adults segmentation into phonemes.

3.3 Lexical/Semantic Awareness

Mean scores, standard deviations, F ratios, and outcomes of the pairwise comparisons of the lexical-semantic tasks are presented in Tables 3 and 4. The results will be discussed below for each task.

Word/Referent Differentiation

When the participants were asked to mention some qualities of the animals after their names were changed, about half of the children and the literate adults were able to play the game, while most of the illiterate adults could not. The range was maximal for the children and the literate adults, while a correct score higher than 2 did not occur among the illiterate adults. Post hoc analysis showed that the difference between children and illiterates and the difference between literates and illiterates were significant, while there was no significant difference between children and the literate adults. There was, however, a difference in their argumentation. Most adults, especially the illiterates, shared the opinion that names cannot be changed, because God gave these names or because it would not be practical to do so (“Why would you do that? Even if we agreed to change the names, the dog would not listen to you.”). Those who did agree to do so found it difficult to answer questions about properties of the animals with new names. The children were better; but they did not argue, but simply played the game of changing names. In discussing this issue further, taking the difference between their first and second languages into account, most adults did not have any problem at all in differentiating word and referent. They all found it convenient that, for example, *akəzin*, the word for dog in Tarifit, differed from the Dutch word *hond*: “Of course those are two different names; one is my language and the other is yours.” But in answering questions about the properties of a cat that was now called ‘dog’, they answered as if the referent *dog* was meant, instead of the animal now named *dog*.

Word Length

Of the ten pairs of words, about nine were done correctly by the literates, while about seven were done correctly by the children and the illiterates. Post hoc analysis showed that the two groups of non-readers (children and illiterates) differed significantly from the literate adults, but not from each other. The range of scores was much higher for the non-readers than for the literates. The only illiterate adult with a 100%-correct score had received some literacy instruction as a child. Most literate adults had a success ratio of 9 or 10. The differences between the groups were even larger when the analysis was limited to really incongruent items like *slang-vogeltje* (snake-little bird), in which the answer *slang* was based on the length of the referent, while the answer *vogeltje* was language-based. All participants were asked to explain their choices. The children often did not explain their answers, but if they did, they either referred to the length of the referent (6 out of 24 children), or they counted the syllables. One child showed how her

recently developed knowledge of language competed with her knowledge of the world: “I just count the letters (meaning sounds),” she said, and then concluded that *train* was surely the longer word in the word-pair *train-motorcycle*. With a few exceptions, all literate adults counted sounds, letters, or syllables. The explanations of the illiterate adults varied most. Six illiterates based their arguments on the length of the referent, but most of them judged the language, but not in the analytical way the literates did, but in a more holistic way. Their arguments could change for different items. Dajaad, for example, often selected the right words and gave explanations like “That is more aware” (more is said here), “It lasts longer,” or “It sounds deeper.” Many illiterate adults judged the items on the way they ‘sounded’.

All in all, the literate adults were significantly better in judging word length than the other groups, and most of them made judgments on an analytic level. About a quarter of both children and illiterate adults based their judgments on the length of the referent. The other children counted syllables, while many illiterate adults used a holistic way of judging some characteristic of the word sound.

Word Judgment

The scores for the word judgment task were higher in the mother tongue than in Dutch as a second language. The main effect of language was significant ($F_{1,62}=9.29$, $p<0.01$). Since the purpose of the task was not to measure second-language ability, only the scores in the mother tongue are taken here as indicators of the word-judgment abilities of children and illiterate and literate adults. The range of scores was largest for the illiterate adults. Post hoc analysis showed significant differences between both groups of non-readers and the literate adults, but no significant difference between children and illiterate adults. There were few differences among the three groups for the judgment of content words (about 80% correct for all groups); the differences were larger for function words, and very large for the multiple word utterances (17% correct for both groups of non-readers and 50% for the readers), which were judged as words by most of the children and illiterate adults.

The explanations given by both groups of non-readers for perceiving a stimulus as either a word or not were interesting. Some children, for example, concluded that *rkaad* (= monkey) was a word because “monkeys exist”, that *brief* (letter) was a word “because you can read it”, that *op* (on, up) was not a word because it is “much too small” or “because it is empty then”, and that *De winkel sluit om zes uur* (The shop closes at six) was not a word “because there are two words, the shop / is closing at six”.

The illiterate adults concluded that *rkaad* (monkey) was not a word “because that is an animal, a word is spoken”, or that it was a word “because it is the name of an animal”, that *looga* (but) “is not a word, it cannot be alone”, that *düşünmek* (thinking) was not a word “because I think, but I do not say it”, that *televizyon* (TV) “is a word, it comes out of our mouth”, that *guryo* (houses) was more than one word (“those are words, there are more than one”), or that *tien* (ten) was a word, “because you can write it down”

A number of the children ‘argued’ as they did in other tasks: they simply ‘know’ or ‘hear’ if something is a word or otherwise. A few children systematically used an implicit length measure, which implied that many function words failed to meet the criterion. Some children needed a clear and observable referent for confirmation, while others needed to know the meaning to accept an item as a word. Except for the length measure, all these criteria were used by the illiterate adults as well, but more often they asked themselves if an item could be used in the context of talking. Illiterate adults,

therefore, hesitated sometimes in labeling function words as words and added the explanation that function words, like *but* or *or*, are not words unless something else is added. A few literate adults used this criterion as well, but most of them just made a plain distinction between words and sentences.

Overall, most of the readers responded as expected and based their answers on linguistic units, while non-readers did not differentiate between single words and clauses or sentences, whereas function words apparently did not have a high status as words.

Sentence Segmentation

As can be seen in Table 3, the children and illiterate adults hardly segmented any sentence into isolated words, while the majority of the literate adults segmented the sentences along word boundaries. Two children and two illiterate adults segmented one of the sentences along word boundaries. There was a significant main effect of group and the post hoc analysis showed that both groups of non-readers differed significantly from the readers ($p < 0.01$), but not from each other.

The next stage of the progressive segmentation task included word groups like *apples and tomatoes* and *in the shop*. In general, the children and illiterate adults more often used word boundaries as the segmentation criterion, but, again, most non-readers preferred another form of segmentation. The most frequently used form of segmentation was of the type *apples / and tomatoes*, and many children again preferred to segment along syllabic boundaries like *a/ples/and/to/ma/toes*. Again, there was a significant main effect of group ($F_{2,61} = 15.46$, $p = 0.00$), while post hoc analysis revealed the same outcomes as for sentence segmentation: readers differed significantly from non-readers ($p < 0.05$), but not from each other.

When we placed the methods of segmentation in different categories, we found the following results. Illiterate adults preferred segmentation along word groups (30.3% of the reactions), and they did not isolate function words (25.8%), or they divided on the basis of content instead of form (21.2%). Most of the children used either syllabic segmentation (30.2%) or mixed reactions (25.4%), while segmentation in word groups (15.9%) and the category ‘not isolated function words’ (17.5%) were less frequent. Literate adults preferred to isolate single words (66.7%), but not isolated function words were also common among the literate adults (24.2% of all reactions), especially among speakers of Tarifit (and one Somali), who did not segment word groups like *rur seppitar* (‘to the hospital’), *di thanut* (‘in the shop’), or *n defab* (‘of apples’).

Overall, when asked to segment sentences or word groups, literate adults preferred to segment along word boundaries, while non-readers segmented the content, used clause boundaries, or negated function words.

3.4 Textual Awareness

Syllogism

A score of 1 was assigned when the answer was both correct and explained on the basis of the premises. In the syllogism *All women in Markey are married. Fatma is not married. Does Fatma live in Markey?* a negative answer was given a score of 1 when the explanation resembled “Because all women are married there” and a score of 0 when the same negative answer was supported by “Because I know Fatma, she lives here.” As can be derived from Table 3, the mean score of the literate adults was more than 3,

while the scores of both groups of non-readers were much lower. There was a significant main effect of group. The range of scores was maximal for both the children and the literate adults, but the median for the children was 1, and for the literate adults the median was 4. The groups of non-readers differed significantly from the readers, but not from each other.

All stones on the moon are blue. A man goes to the moon and finds a stone. What color is that stone? Some representative answers of the different groups are given below. The answers are followed by a short version of the clarification given”.

Yellow, because the moon is yellow as well [child].

White, I once saw white stones [child].

Green with black, I've seen that in Turkey [child].

Black, because it's very hot there [illiterate].

Surely there are no stones on the moon [illiterate].

I have to see it first [illiterate].

Blue, all stones are blue there [literate].

If he really was there, and all stones there are blue, then it must have been blue [literate].

All stones there are blue, so that one too [literate].

Three types of argumentation were used most frequently. The first was deductive reasoning on the premises (“Because all stones are blue there”). The second was based on the experiences of the participant, irrespective of what the premise was about. Examples are the clarifications of the participants who relied on their knowledge that stones are brown, black, or gray, and of the participants who stated that they could not know, because they had never been to the moon. The third type comprised reactions that questioned the premise itself, and was used only by the adult participants. Their comment was that the premise made no sense: “There are no stones on the moon” or “There is no country where all women are married”.

Most illiterate adults argued on the basis of their own experience (63.7% of all responses), while premise-related reactions (19.5%) and comments on the premise (10.6%) were scarcer. The majority of the literate adults' responses were premise-related (67.0% of all responses), and fewer were experience-based (25%). The reactions of the children were distributed more evenly (32.9% premise-related, 38.8% experience-based, and 28.3% no argument).

The overall conclusion is that adult readers with about four years of primary school can solve syllogisms significantly better than both groups of non-readers. Except for about one-third of the answers given by children, who did not argue at all, most of the ‘wrong’ answers were, in one way or another, experience-based.

4 Conclusions and Discussion

Overall, the outcomes of this study confirm the idea behind the literacy hypothesis that literacy brings a change in what people know about the language they already understand and speak fluently. There were many more differences between readers and non-readers in the language-awareness tasks than between children and adults. This was true for almost all lexical/semantic tasks. The phonological tasks showed a more complicated picture. It has been shown repeatedly that non-readers, both children and adults, are not aware of the phoneme as a linguistic unit. Non-readers did not produce

phonemic segmentation, but readers did. Non-readers who did segment sub-lexically segmented into syllables, the overwhelming strategy of the young children. The rhyme-production responses of the adult illiterates were quite different from those of the young children, who on average were very good at rhyming. Perhaps the rhyming of young children is more implicit and on-line than that of adults. Some justification for this interpretation may be found in the pseudo-word reactions of many children, which were rarely given by the adults. This may mean that rhyming requires more analytic processing from adults than from children. More research is needed to compare adults and children in different languages, especially research in which the phonological features of the different languages are taken care of (see Geudens, this volume).

The reactions of the illiterates to the lexical/semantic-level tasks can be divided roughly into two groups. About a quarter of the illiterates (about the same proportion of the children reacted in the same way) systematically judged or reacted to the content of the questions, not the language. A larger part of the illiterates reacted to language as an object, but differed from the literates, who mostly used an analytic strategy to come up with an answer. Most of the illiterates used a kind of holistic strategy. They judged word length on the basis of duration, they segmented sentences along conceptually or semantically meaningful units, or they mentioned speech acts as examples of words (Gombert, 1992; Doherty, 2000). It seems that content words like substantives, verbs, or adjectives have a much higher 'word status' than functors such as articles, prepositions, and conjunctives like *but* and *or*, which were not isolated or were just left out. This outcome concerning the word concepts of the illiterates does not fit well with Karmiloff *et al.*'s (1996) conclusion that even four-year-old children have a clear concept of words as linguistic units, nor does it confirm Scribner & Cole's (1981) outcome that there was no effect of literacy on the word concepts of the adults in their experiments.

The reactions to the syllogisms confirm Luria's (1976) finding of significant differences between illiterates and literates, and not Scribner & Cole's, although the syllogisms of the last study were used. This outcome should not be interpreted as showing that illiterates are not able to reason logically in general, as Scribner & Cole (1981) also noticed. There is a clear sense of logic in the reactions of the illiterates who rejected the premise of a syllogism "because there are no countries in which all women are married." A more plausible explanation for the differences between illiterates and literates can be found in Ong's (1982:53) statement that a syllogism is a self-contained, isolated text that needs decontextualising from real life experiences to be solved.

It may be this focus on the exclusive use of within-text relations that is brought forward by literacy instruction; learning to read and write may attend, more than any other use of language, to discourse in which sentences or words only refer to each other and to nothing else. The beginning reader probably has to learn to cope with that type of 'decontextualized' language. The illiterates systematically related the sentences of the syllogisms to their knowledge of the world; they did not separate 'imagination from real life' (Heath, 1986).

For most illiterate adults, language is a referential system and a medium of communication, but not an object accessible to reflection, or a string of elements that can be parsed into structural units. About a quarter of the illiterates systematically reacted to the content of a message/utterance only, and not to any more formal linguistic property. The other illiterate adults reacted in one way or another to more

formal language properties, but most of the time not in the analytical way that most of the literate adults demonstrated. Asked for examples of words, illiterate adults came up with 'speech acts' or concrete objects and activities. When talking about linguistic units, they considered things like unity of place (in the shop) or person (the old man), or the communicative domain of exchange of messages. When asked to segment sentences, they used semantic-pragmatic instead of formally oriented linguistic strategies. In solving syllogisms, their answers were directly based on their world knowledge, and not on any kind of formal premises. Illiterate adults are able to reflect on many language-related aspects: on the content, on the utterance as a whole, or on the way something is said. However, they are not able to reflect on more formal aspects of language, an ability they did probably not acquire because they did not receive literacy training.

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WORKING MEMORY, SECOND LANGUAGE ACQUISITION AND LOW-EDUCATED SECOND LANGUAGE AND LITERACY LEARNERS

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1 *Introduction*

The role of memory in language learning has long been of interest to researchers in first and second language acquisition (SLA) (Baddeley, 1999; Ellis, 2001). At an intuitive level, it seems obvious that part of the explanation for individual differences among adults in success at learning a second language (L2) is attributable to differences in memory capacity. In SLA, researchers have focused on short-term rather than long-term memory differences because they think short-term memory is more responsible for differences in language development. The reason for this belief is that short-term memory is an on-line capacity for processing and analyzing new information (words, grammatical structures and so on); the basic idea is that the bigger the on-line capacity an individual has for new information, the more information will pass into off-line, long-term memory. It is an open question whether low-educated second language and literacy acquisition populations (LESLLA) have short-term memory systems that are similar to literate, educated populations, and if so how their working memory capacity can be measured. This paper will survey the literature on this topic, and will make some suggestions about how models of memory (as they have been applied to second language learning) may and may not be applied to LESLLA contexts.

The review is organized as follows. First, different models are presented, along with the principal research results and main areas of disagreement among researchers. Section three deals with working memory and second language acquisition research. Finally, section four addresses how these models may or may not be appropriate to LESLLA contexts.

2 *Models of Working Memory*

In the psychological literature, theories of working memory can be divided into two main approaches, each with their own constructs (or ways of operationalizing working memory) and tests that measure those constructs in individuals. The first is called 'phonological working memory' (PWM) (Baddeley & Hitch, 1974; Gathercole & Baddeley, 1993). PWM tests measure the capacity of an individual to remember a series of unrelated items with covert 'inner speech' rehearsal (Ellis, 2001:34). This ability is measured by requiring participants to remember lists of unrelated digits, real words, or non-words; in *some* versions of this non-word repetition test, these non-words have

phonemes that are not in the native language (L1). The second is reading span memory (RSM) (Daneman & Carpenter, 1980). Tests of RSM claim to measure the resources available to *simultaneously* store and process information. RSM tests require participants to read aloud lists of sentences written on cards (or on a computer) and then recall the final word of each sentence *without* covert rehearsal. The key difference between the tests for PWM and RSM is that the RSM requires both processing and storage, whereas the PWM only requires the participant to repeat polysyllabic words or repeat a string of unrelated words correctly. PWM and RSM are traditionally treated as separate (Baddeley & Hitch, 1974; Carpenter, Miyake, & Just, 1994; Daneman & Carpenter, 1980; Roberts & Gibson, 2003; Sawyer, 1999) because scores on the tests do not correlate. Carpenter, Miyake, & Just (1994:1078) specifically state that ‘traditional’ span measures (digit, word) do not decline with age and do not correlate with sentence comprehension impairment, whereas RSM does decline with age and correlates with sentence comprehension scores. However, debate and speculation remain on the validity of this separation (Ellis, 2005:339). The next two subsections describe these models in more detail.

2.1 Phonological Working Memory

Research into phonological working memory (PWM) (sometimes referred to as phonological short-term memory (PSM)) is primarily associated with the British psychologist Alan Baddeley and his colleagues (Baddeley, 1999; Baddeley *et al.* 1998). Variation in phonological working memory ability is said to be related to language learning in children and adults. The capacity for phonological working memory has been operationalized in two different ways.

The first test is the ability to repeat nonsense words of different syllable length (e.g. ‘landiplation’, ‘geplore’). In some cases, the word to be repeated can be up to nine syllables long (Pappagno & Vallar, 1995). Participants have to repeat the nonsense words *accurately*. The version of the test with non-words that contain unfamiliar sounds is used to assess the ability to encode new phonological sequences because using strings of unfamiliar sounds prevents the participant from accessing stored knowledge to help in the repetition.

The second way phonological working memory is defined is as the ability to reliably remember *lists* of unrelated words in the same order as they were presented (Harrington & Sawyer, 1992; Just *et al.*, 1996; Cheung, 1996). This test is the word *span* or digit *span* test. The presentation of the words can be either in written or aural mode. The test typically begins with five ‘lists’, with each one containing two words. The length of the list then increases, and can reach up to 10 words. There are five lists at each level (2, 3, 4, word level etc.) to make sure that the participant in the study can reliably remember a list at that particular level. Variations exist on this model, but the basic idea is that individuals vary in their ability to remember lists of items in the same order as they are presented.

Some confusion between the *repetition* task and the simple *span* task exists in the developmental literature (Ben-Yehudah & Fiez, in press). Differences the method used to measure PWM may explain some differences in how useful the tests are in predicting vocabulary size and language development (Cheung, 1996:872), although some researchers suggest that *both* measures tap the same underlying construct, namely PWM (Pappagno & Vallar, 1995:104).

The construct of PWM is related to a larger model of memory, which is described and summarized in detail in Baddeley (2000b). The model is provided in Figure 1. PWM is a measure of the component labeled the ‘Phonological Loop’ in Figure 1.

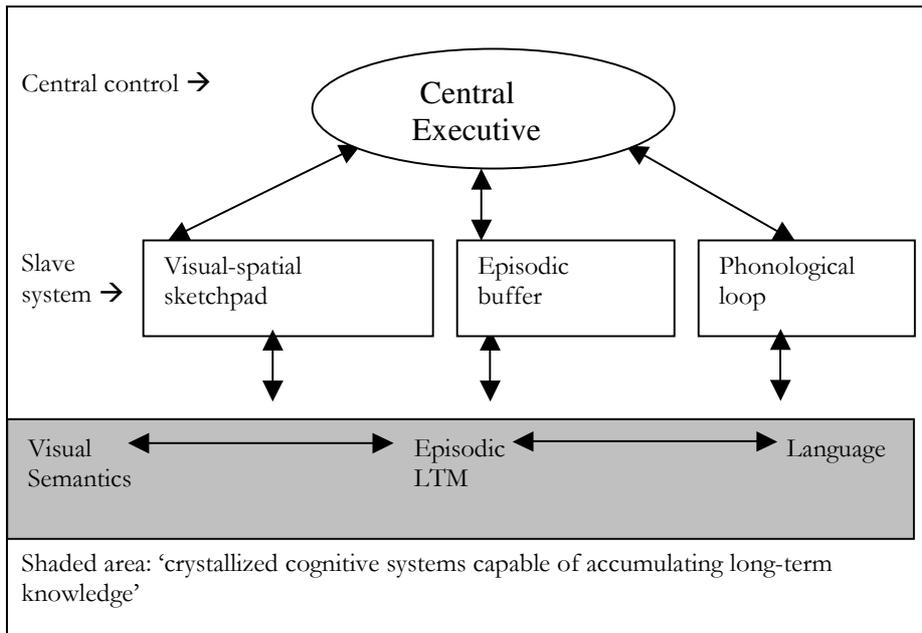


Figure 1: Working Memory Model, Baddeley (2000b).

The model contains other components that are related to PWM. The Central Executive directs attention – obviously one cannot remember something one has not paid attention to. (This claim does not rule out ‘subliminal noticing’, see Schmidt, 1990). The visual-spatial sketchpad relates to visual memory. An interesting development is the addition of the ‘Episodic buffer’ to the model. Although the construct ‘episodic memory’ is not new (see papers in Baddeley *et al.*, 2002), the reason for this modification is that the episodic buffer may explain the behavior of individuals who have phonological loop deficits. These individuals fail or do very poorly on the tests that measure PWM and have difficulty with new memory/learning. However, they can recall narratives and even groups of playing cards that have already passed in games such as contract bridge.

The body of research that claims to support the role of the phonological loop in language learning is extensive (e.g. Baddeley, Gathercole, & Pappagno, 1998; Ellis, 2001). The phonological loop has been implicated in the acquisition of *new* words in *children*, and does not reflect the knowledge that a child already has. Baddeley, Gathercole, & Pappagno (1998:159, Table 1) report that in partial correlations for 3 year-olds, non-word repetition is more strongly correlated with vocabulary measures than digit span (0.31 vs. 0.16 (ns), whereas for 8 year-olds *neither* span correlates (0.22 (ns) vs. 0.23 (ns)). In the data they report for 13 year olds, simple digit span is related to vocabulary measures ($r = 0.46$, $p = 0.05$). One point to make here is that the values of r

are not very high, e.g. 0.46, which means that the memory test explains only limited amount of the variance. In addition, these ‘now you see it, now you don’t’ effects of different measures of PWM in L1 learning are (for reasons unclear to me) *not* given enough attention in L2 reviews of this literature (but see Cheung, 1996 and Pappagno & Vallar, 1995). Baddeley *et al.* (1998:167; Baddeley, 1999) also discuss research with *adults*. This work supports a role for the phonological loop in learning *new* words in adults; however, it has not been implicated in studies of sentence processing (see section 2.2) or in the acquisition of complex morphosyntax. Before going into the role of PWM in L2 learning further, I turn to a more detailed account of RSM.

2.2 Reading Span and Working Memory

The Daneman & Carpenter (1980) working memory measure (RSM) is the foundation of a large literature in the research into the psychology of reading and comprehension for *adults*. As far as I am aware, RSM measures have not been used to track first language *development* in children, probably because the task would be far too demanding, and because very young children cannot read. Since its introduction of the test in 1980, Just, Carpenter and colleagues (Just *et al.*, 1996) have developed the constrained capacity model to explain individual differences in reading comprehension, speed and accuracy in resolving ambiguous sentences (King & Just, 1991; MacDonald, Just & Carpenter, 1992). The model also relates to differences in scores on standardized tests such as the Scholastic Aptitude Test (SAT). The SAT is a test in the United States that assesses academic preparedness for university study. Daneman & Hannon (2001) report that that the higher one’s RSM the better the scores are on these standard tests.

A striking example of the effect of differences in RSM has been reported on reading and processing of individual sentences. Research into the process of reading with eye-tracking and self-paced reading (as well as off-line experiments) has shown that reading involves *incremental* sentence processing. This view holds that a native-speaker reader of an alphabetical script such as English, Dutch, or French does not ‘take in’ a large amount of text (say 7-10 words) and then decides the appropriate syntax for that set of words. Rather, each word is processed rapidly, and the reader makes assumptions immediately about a possible syntactic structure for that word and the ones that follow. This view accounts for readers being misled by ambiguous sentences, and the subsequent ‘surprise’ when their reading goes off track because the structure they had assumed turns out to be wrong. This ‘surprise’ is known as the garden path (GP) effect. This incremental processing theory emphasizes structural, cue-based, and pragmatic principles in its account for the resolution of ambiguity, but also allows a role for frequency effects (see recent papers by Gibson and colleagues, as well as Frazier (1996) and colleagues, and MacDonald and colleagues listed in the references).

An interesting facet of working memory capacity in this model of reading is that the effects of individual memory differences are not fixed, but task-dependent (Just *et al.*, 1996; Miyake & Friedman, 1998). For example, a high-memory-capacity individual will be more accurate in comprehension and resolve an ambiguity at crucial points in reading a sentence such as (1) more quickly than a low capacity individual.

- (1) The evidence *examined* by the lawyer convinced the jury.

In (1) the verb 'examined' is *temporarily* ambiguous between a main verb and a reduced relative clause structure. Pragmatic information may be used to quickly resolve the parse in favor of a reduced relative clause reading because 'evidence' is inanimate and unlikely to be the agent of any 'examining'. High WM capacity readers are able to resolve this ambiguity more quickly than low WM capacity readers. According to Just and colleagues, this is because high capacity readers are able to combine pragmatic and syntactic information in parsing more efficiently than low span readers. On the other hand, in a sentence such as (2), while high capacity readers are also more accurate in comprehension, they take *more time* to resolve the parse:

- (2) The soldiers *warned* during the midnight raid attacked after midnight.

The account of this difference in processing speed between (1) and (2) for high WM capacity readers is that in (1) high WM individuals are able to make rapid use of pragmatic information, whereas in (2) the ambiguity of 'warned' sets up three *purely syntactic* possible parses: a main verb reading, an intransitive verb reading, and a reduced relative reading. Just and colleagues argue that high WM individuals in this case are able to maintain all three possible parses active in parallel, and hence take *longer* to process them. Ultimately, however, they are more accurate with comprehension probes, whereas low WM capacity individuals are faster, but less accurate. Low WM individuals allow the parse to crash, and therefore read more quickly. However, the cost is that they reject these sentences as implausible or fail to understand the relationships among the noun phrases.

2.3 Issues in PWM and RSM Research

The two constructs of working memory have been the source of considerable debate in the psychology literature. For example, there is a lack of clarity on the domain of memory in the Central Executive, illustrated in Figure 1: Baddeley (2000a,b) disallows the Central Executive any capacity for storage, contra many assumptions by Just, Carpenter and colleagues that the RSM taps 'central executive capacity'. Recall that Daneman & Carpenter (1980:451), King & Just (1991:582), Carpenter, Miyake, & Just (1994:1078) claim that traditional span measures (digit, word) do not decline with age and do not correlate with sentence comprehension impairment, so the phonological loop ought not to be the source of individual differences in this area. However, Jenkins, Myerson Hale & Fry (1999) report that spans increased with age in children and decline with adults in the absence of a secondary task. Moreover, subjects with larger spans showed greater interference effects from a secondary task. This latter finding is not easily explained by current WM theories, which predict that a high WM should be an advantage when the individual is carrying out two tasks. Finally, in his 1999 textbook, Baddeley makes no mention of RSM, and does not cite any of the studies based on the RSM tests.

Also at issue is whether working memory is a domain general capacity (Just, Carpenter & Keller, 1996) or whether separate working memories exist that serve specific domains, e.g. syntactic processing, especially local ambiguity resolution, vs. discourse level integration and comprehension (Waters & Caplan, 1996a,b). Waters & Caplan (1996a:52) argue that the memory load imposed by the RSM 'is unrelated to the computations that the sentence task requires' and that bad performance on the RSM

test may reflect a low ability to rehearse words rather than a limited storage capacity. Waters & Caplan (1996b) review studies from impaired populations whose WM capacity is reduced, but who are no worse than 'normals' in comprehending syntactically complex sentences. In addition, Waters and Caplan (1996b) failed to find RSM effects with normals and GP sentences.

Finally, MacDonald & Christiansen (2002) suggest that results of WM/RSM experiments reflect nothing more than language experience. They agree that there are capacity differences, but suggest that capacity differences are due to varying amounts of exposure to text. For example, they argue that superior performance by some individuals on subject relative clauses (e.g. 'the leopard that ___ chased the lion climbed the tree') compared to objective relatives (e.g. the leopard that the lion chased ___ climbed the tree') appears because good readers simply read more. This argument stems from a theoretical position that denies the existence of a symbolic system whose deployment is constrained by an independent working memory. Just and Varma (2002) strongly dispute points by MacDonald & Christiansen (2002). They refer to specific biological predictions their model has made about patterns of brain activity, which have been borne out. In support of the Just & Varma position one can cite independent studies of Event-Related Potentials (ERP) that do show some effects of High Span vs. Low span subjects with L1 processing of German (Fiebach, Schlesewsky, and Friederici, 2002; Vos, Gunter, Schriefers, Friederici, 2001). Specifically, Vos *et al* (2001) found a three-way interaction among syntactic structure (relative clause type, subject vs. object relative), processing load, and working memory. Hence, when compared to the low span learners, high span learners comprehended object relative clauses better and showed a different pattern of brain activity during processing.

3 Working Memory and Second Language Acquisition

3.1 Early Research on L1 and L2 Working Memory

The literature on working memory and L2 acquisition has emerged later and is much more sparse than in L1 processing and acquisition (Harrington and Sawyer, 1992; Osaka & Osaka, 1992; Osaka *et al.*, 1993). However, since the early 1990s an increasing interest in the topic has developed (Myles *et al.* 1998, 1999; Kroll *et al.*, 2002; Mackey *et al.* 2002, Robinson, 2002; Williams & Lovatt, 2003).

A considerable amount of research exists into the relationship between the simple digit span or non-word span as well as non-word repetition operationalizations of PWM (Cheung, 1996; Ellis & Sinclair, 1996; Service, 1992; Service & Kohonen, 1995). However, the reading span measure of working memory is much less well investigated than the word span measure or non-word repetition measure. Early research concerned the relationship among working memory measures in the L1 and the L2, and their correlations with proficiency scores on standardized tests (e.g. the TOEFL, Test of English as a Foreign Language, and the TOEIC, Test of English for International Communication). Some researchers found reliable relationships between L1 and L2 RSM memory test scores: Harrington & Sawyer, 1992 ($r=0.39$); Osaka & Osaka, 1992, ($r=0.84$); Berquist, 1997 ($r=0.48$); Miyake and Friedman, 1998 ($r=0.58$). Harrington & Sawyer (1992) found relationships between RSM and reading and grammar scores in

their study, but Berquist (1997) did not, and suggested that PWM was a better predictor of proficiency.

Where PWM is concerned, Ellis (1996, 2001) in particular has been a strong advocate of the role of the phonological loop in acquisition across the life span. In a frequently cited paper, Ellis (1996, p 102) claimed that working memory as measured by a *non-word* repetition test was the best predictor of success in L2 learning: "To put it bluntly, learners' ability to repeat total gobbledygook is a remarkably good predictor of their ability to acquire sophisticated language skills in both the L1 and the L2". However, the research results are somewhat perplexing in that they are inconsistent across levels of learners and L1 groups. Moreover, there are inconsistencies in the relationships between scores on the PWM and RSM, which for L1 speakers are not supposed to correlate. For example, Berquist found that PWM (word span) and RSM correlated, whereas Harrington & Sawyer (1992) did not. In addition, effects of PWM (word span) can be found in lower proficiency learners but not in higher ones, but no relationship with vocabulary knowledge was found (Cheung, 1996:872). Regression analyses using non-word repetition accounts for variance in vocabulary (Pappagno & Vallar, 1995), but not for grammar (Harrington & Sawyer, 1992, p. 31; Service & Kohonen, 1995:170). Williams & Lovatt (2003) report that *rate* of learning is more related to PWM (word span) than the ultimate accuracy. Finally, Juffs (2004, 2005, 2006) did not find any relationship between PWM (word span) and measures of vocabulary and grammar on a standard test of vocabulary and grammar. For L2 learners, it is unclear whether PWM and RSM are related and which *subdomains* of language (vocabulary, morpho-syntax, etc.) and for which *type* of learner working memory capacity can make reliable predictions.

3.2 Working Memory and Second Language Sentence Processing

Juffs & Harrington (1995) were the first L2 acquisition researchers to use a self-paced reading paradigm to look at real-time L2 processing of syntax, although some studies had investigated the lexicon using reaction time data (for a review, see Juffs, 2001). Based on this 1995 study, and further research (Juffs, 1998a,b; Juffs & Harrington, 1996), the indications are that L2 learners process their L2 word-by-word in a similar but not identical way to native speakers. (For literature reviews see Clahsen & Felser, 2006; Fender, 2001.)

The similarities between L1 and L2 processing are that the profiles of decision-making at the word level during processing seem to depend on argument structure, i.e. the number of noun phrases and prepositional phrases that are required by the meaning of the verb. The evidence for this comes from Garden Path (GP) sentences. Recall that a conscious GP effect occurs when the hearer or reader cannot interpret the clause without an effort that brings the structure to his or her *conscious* attention. The situation in (4a) presents such a processing challenge because 'the socks' is initially interpreted as the object of 'mended', but must later be reanalyzed as the subject of the verb 'fell'. In (4b), in contrast, no surprise effect occurs.

- (4) a ¿After Mary mended the socks fell off the table.
 b After Mary mended the socks they fell off the table.

Non-native speakers seem to be ‘Garden-Pathed’ in the same way native speakers are (Juffs & Harrington, 1996; Juffs, 2004); they do not seem to accumulate ‘chunks’ of text before deciding on a parse, but (like native speakers) decide on a structure as soon as possible and then go back and revise it if it is necessary. Furthermore, Juffs (1998a; 2006) showed that resolution of clauses containing reduced relative clauses depended on knowledge of verb requirements and that learners were sensitive to likelihood that lexical material could be the internal argument/object.

However, the differences between native speakers and non-native speakers include evidence for the effects of the L1 in reading. A body of research has investigated knowledge of complex questions in English by speakers whose languages form questions differently. For example, consider the sentence: ‘Who does the doctor know ___ examined the patient in the hospital?’ Many linguists assume that the word ‘who’ has been ‘moved’ from the subject position of the second clause in the sentence by a ‘rule’; this movement leaves behind a ‘trace’, indicated by the line ‘___’ that is between ‘know’ and ‘examined’. The language processor seeks to match the moved ‘who’ with the trace as soon as possible during reading. In languages like Chinese, the word ‘who’ remains in the position where the ‘___’ is in the English sentence. In other words, the wh-words do not appear at the beginning of the sentence in these languages. These languages are said to lack ‘wh-movement’. Juffs & Harrington (1995) reported data that suggested that the lack of wh-movement in the L1 could affect processing of L2 wh-traces, in particular the extraction of an subject from a subordinate clause. Moreover, there is a hint from data in Juffs (1998a,b) that speakers of head final languages (Subject-Object-Verb order, e.g. Japanese and Korean) appear to slow down on processing verbs and objects, which may suggest an effect of L1 word order. Fender (2003) has subsequently reported that Japanese learners were superior to speakers of Arabic in simple word recognition, whereas Arabic speakers were superior to Japanese in syntactic integration. These results suggest that Japanese learners are at a particular disadvantage in processing head-initial syntax, despite their superior ability to recognize words. In contrast, some researchers have failed to find L1 word order effects in the processing of some structures, e.g. Felser *et al.* (2003); Marinis *et al.* (2005).

Similar to findings for native speakers of English reported by Just and his colleagues, some of the intra-group differences are as great as the between-group differences in studies of second language speakers (Juffs, 1998a,b). It appears that a large amount of individual variation occurs in experiments of this type, whether they are in L1 or the L2. One question, therefore, is whether these individual differences can be tracked to individual differences in working memory, because the processing pressures in garden path sentences provide a context where differences in working memory may affect parsing decisions. Few researchers have reported reliable correlations of WM measures with difficulties in ambiguity resolution, e.g. Williams, Möbius, & Kim (1999). Some effects have been found in the Competition Model framework (Miyake & Friedman, 1998), but the simple three word paradigms used in that research tell us little about processing more than three words, and nothing at all about long-distance dependencies and ambiguity resolution, which are characteristic of natural language systems (Gibson, 1992; Harrington, 2001).

In a series of studies, Juffs (2004, 2005, 2006) sought to investigate these issues with three groups of non-native speakers: Chinese speakers, Japanese speakers and Spanish speakers. Of particular interest was the relationship of PWM to RSM and the role of working memory in explaining individual differences in processing performance, and

hence the parsing success or failure that leads to differences in acquisition. The following sentence types were used: garden path sentences (5), reduced relative clauses (6), and wh- questions (7).

- (5) ¿After the children cleaned the house looked neat and tidy. (Garden Path)
- (6) The bad boys watched *almost every* day were playing in the park.

Sentence (6) is an especially challenging sentence to read because the verb ‘watched’ is temporarily ambiguous in *three* ways: it could be a either main verb that is transitive, a main verb that is ‘intransitive’, or a reduced relative clause. In addition, the ambiguity is not resolved until the end of the adverbial ‘almost every *day*’ because one could imagine, for example, that the words ‘almost every’ would be followed by a noun that is the direct object of ‘watch’, e.g. ‘watched *almost every episode of the series*’. Hence, ‘almost every day’ is a very bad cue for ambiguity resolution. Such sentences are especially difficult for some readers, compared to their unambiguous counterparts such as ‘The bad boys *chosen* for the game were playing in the park’. The latter sentence is not ambiguous because the morphological shape of ‘chosen’ alerts the reader to its status. Naturally, for non-native speakers, this prediction assumes that learners know the morphology of past participles in English (see Juffs (1998b, 2006) for discussion).

In (7), one can compare a wh-phrase extracted from a Subject position (7a) to a wh-phrase extracted from an Object position. Research shows that sentences such as (7a) are especially hard to process.

- (7) a Who does the nurse know ___ saw the patient at the hospital? (finite, Subject)
- b Who does the nurse know the doctor saw ___ in his office? (finite, Object)

The results from this series of experiments were not generally supportive of a role for working memory in explaining individual differences in processing of sentences of the three types in (5) – (7) or in explaining differences in general proficiency. To summarize the results, Juffs (2004, 2005, 2006) reports that a relationship existed between PWM and RSM for the Japanese and the Spanish-speaking learners, but no such relationship was found for Chinese participants in the study. This pattern, or lack of a pattern, is not predicted by the L1 literature (which predicts no relationship between PWM and RSM), and is not consistent across L2 groups.

For the Chinese-speaking and the Japanese-speaking participants, no relationship between working memory scores and general proficiency test scores was found. For the Spanish-speaking learners, a very weak relationship between the RSM and the general proficiency emerged, but no relationship between PWM (word span) and general proficiency.

In reading sentences such as (5), only a very marginal effect of PWM was found to exist, and only if all the data were aggregated. For processing times during reading of the most memory-taxing parts of sentences in (6) and (7), i.e., the main verbs, differences in working memory did not correlate with individual differences in reading time. However, the first language was a reliable predictor of difficulty. This L1 influence was due more to structural properties of the first language rather than script (writing system), because the Chinese (logographic) and Spanish (alphabetic) speakers patterned together, and the Japanese speakers (mixed logographic and syllabary)

behaved differently. The Japanese speakers had particular problems processing finite verbs.

4 Working Memory and Less-Educated Second Language Learners

To establish differences in working memory for learners who are low educated and/or non-literate will be a challenge. The difficulties for these populations in completing psychometric tests have been well documented since Luria (1976). Even for people from western cultures, it is necessary to consider cultural contexts when ‘testing’ non-literate and less-educated learners. For example, Gonzalez *et al.*, (2004, p. 267) reported that in two tasks of verbal fluency, non-literate participants were not different from literate participants with verbal fluency tasks that were related to shopping, but were reliably different in a task that involved animals. They attribute the interaction of literacy with task type to cultural differences between literates and non-literates of *similar* background (i.e., in Portugal). One can only imagine how magnified such differences would be in samples drawn from populations as different as literate native speakers and non-literate non-native speakers.

As already noted, the research on working memory and (second) language learning is limited and has not produced replicable results in some contexts. Naturally, work on memory and LESLLA populations with working memory is very limited indeed, given the cultural assumptions that learners bring to ‘testing’. By cultural assumptions, I mean that LESLLA populations do not have a mental schema for what they should do in a test situation or what kind of ‘event’ a test is in some cases. A search of the Linguistics and Behavior Abstracts, using the key words ‘memory’ and ‘illiterate’, resulted in only 21 hits, and a search using the key words ‘memory’, ‘literacy’ and ‘bilingualism’ resulted in only six hits. (I note that the term ‘illiterate’ is not one that is preferred among LESLLA researchers. However, it is indeed used in the literature in psychology.)

In spite of the limited amount of research, one can make some observations where working memory, reading and LESLLA populations are concerned. It is almost too obvious to state that students who have low levels of literacy (and therefore low levels of computer literacy) will not be able to complete tasks that are routinely administered to college-age and college-educated native speakers. This effectively rules out the RST as a measure of working memory for non-literate participants, and leaves PWM and measures that tap that capacity via non-technological means as plausible ways to measure working memory in LESLLA populations.

In one of the few papers to emerge from the literature, Loureiro *et al.* (2004, p. 502) report on a study of 97 Brazilian illiterate [sic] and semi-literate adults. They found that phonological memory (as measured by real word and non-word repetition tasks) was very low in the population they term ‘illiterate’ (68 out of their total 97 participants). The scores for real words were much higher than for non-words. They also report that this memory ability was unrelated to letter knowledge. They therefore conclude that phonological memory, phonemic awareness and phonological sensitivity are *not* related in this population.

In another study, Petersson *et al.* (2000) published brain-imaging results that suggest a reason for poor performance on non-word tests of working memory in non-literate populations. Petersson *et al.* (2000:365) report that ‘learning to read and write during childhood alters the functional architecture of the brain’. The result that is particularly

relevant for PWM is that literates do not differ in word and non-word repetition tasks, but illiterates do differ. Petersson *et al.* (2000:373) interpret the patterns of brain activity to indicate that 'literates automatically recruit a phonological processing network with sufficient competence for sublexical processing and segmentation during simple immediate verbal repetition, whether words or pseudowords, while this is not the case for the illiterate group.' The implication is that knowing an alphabetic system allows literates to process phonological segments (sublexical elements) of unknown words, whereas this is not possible for illiterates. Moreover, Kosmiris *et al.* (2004)'s findings that suggest level of literacy is a factor in phonological tasks is an important confirmation of suggestions made by Petersson. In their study, Komiris *et al.* (2004, p. 825) compare semantic and phonological processing in three groups: high and low educated literates and non-literates. They found that semantic processing was unaffected by literacy, but augmented by schooling; in contrast Komiris *et al.* (2004, p. 825) state that: 'explicit processing of the phonological characteristics of material appeared to be acquired with literacy or formal schooling, regardless of the level of education attained: those who had attended school and had acquired symbolic representation could perform the task, but those who had not, did very poorly'.

Exploring the implications of this research for non-literate adult learners of a second language awaits further research. A pessimistic view might be that if we assume a critical period for language (DeKeyser, 2000; Johnson & Newport, 1989), then learning a new language will be particularly hard for non-literate adults because they will find the L2 especially challenging because by definition it consists of 'pseudo-' or 'non' words for them. However, some caution is in order before one becomes too pessimistic. First, debate on the critical period continues, even for phonology (e.g., Birdsong, 2005; Flege *et al.*, 2005), and it may be that other factors such as motivation, exposure, and culture play an even greater role than age in predicting success. One must also take care in how one defines success in a second language, since success probably goes beyond a definition based narrowly on morpho-syntactic and phonological features to one based on the ability to participate meaningfully in another culture. In addition, evidence exists that some illiterates can become literate in their L2 as adults; this is an achievement that should not be possible if a true neurally based-critical period exists. Finally, differences among children in non-word repetition capacity exist, and differences do predict vocabulary size and growth in these children. Since children are not literate at age 3, and can learn language, the implication is that the phonological loop for non-literates might still be a useful measure to explore.

In general, the results in this literature suggest that establishing a test of working memory for non-literates will be difficult, because non-literates are likely to perform at floor level with non-word repetition tests. Without a *range* in scores, there can be no correlation with other language proficiency measures, not even those that are not related to literacy. Since pseudo-words are not processed in the same way in illiterates as they are in literates, real word and digits in the L1 could possibly be used exclusively. Overall, given that some researchers (e.g. Pappagno & Vallar, 1995; Williams & Lovatt, 2003) have used span tasks successfully, the span tasks hold out the most promise for preliminary research with illiterates. For less-educated learners who are somewhat literate in their first language, use of PWM repetition seems plausible based on Kosmiris *et al.* (2004)'s findings. Researchers may want to begin by testing students who are less-educated, but literate, with a word span or digit span from their own language

and then follow up with a non-word repetition task if the establishment of a measure of working memory that could predict L2 acquisition is desired.

Finally, Baddeley's construct of the 'episodic memory buffer' may have some promise as a test for the ability to relate long-term knowledge and memory. Differences may exist in the ability to recall characteristics that are associated with known words and construct imaginary situations with those words. For example, Baddeley (2000b) suggests that when accessing long-term memory for use on-line, one could imagine an exercise that would require a participant to think about how an elephant would perform as an ice-hockey player. This novel situation would require the participant to hold in memory the characteristics of elephants (large, ungainly, long trunk) and ice hockey (slippery surface, fast, violent) to construct a scenario: an elephant might play well in goal, be slow, and able to 'body-check' effectively. Differences in the ability to access such knowledge and construct 'new' or imaginary situations with that knowledge might be used to predict language learning outcomes. This task may be particularly promising because some researchers report that the participants who are most successful at the RSM task are those participants who covertly construct a story with the words that are the target of recall, even though they are not supposed to engage in covert rehearsal (Osaka & Osaka, 1992; Juffs, 2004). Hence, episodic memory may mediate between visual spatial long-term memory and long-term memory for language.

The problem with the episodic buffer is that it is an innovation in the model, and as far as I am aware, no tests of episodic working memory have been established, at least not with the 'pedigree' of the PWM and the RSM. Indeed, in his introduction to the edited volume on episodic memory, Baddeley (2002:7) writes: 'I was tempted to crash the episodic memory party with a presentation on the buffer, ..., [but] at under 1 year old, the episodic buffer is a little young for parties.' Moreover, questions must remain about this construct, since it has only been proposed on the basis of the study of patients who have medically defined memory and language deficits, which is not the case for LESLLA (Baddeley, 2002, Jefferies *et al.*, 2004).

5 Conclusion

The role of working memory in explaining individual differences in L2 learning has a history of less than twenty years. Many problems remain in replicating the relationships between PWM, RSM, language proficiency and reading even when experimental participants are literate L2 learners. The role of the L1 appears more important than differences in working memory in explaining performance on some on-line processing and reading tasks (c.f. Marinis *et al.*, 2005). Moreover, the little research that does exist with non-literate populations suggests that they perform poorly on such tests and that literacy may change brain architecture to the extent that non-word tests may not be useful as a measure of working memory. Given the cultural assumptions that decontextualized psychometric tests make, and the problems that LESLLA populations have in understanding such tests, extreme caution is necessary before any predictions or conclusions about the abilities of non-literate and low-educated learners' ability to succeed in acquiring proficiency in an L2 can be made on the basis of current tests of working memory.

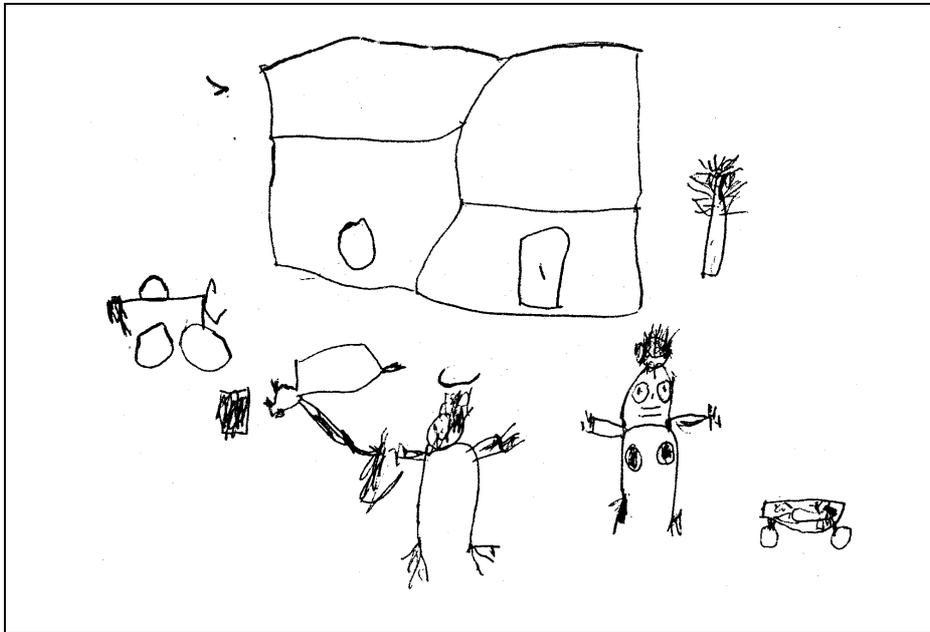
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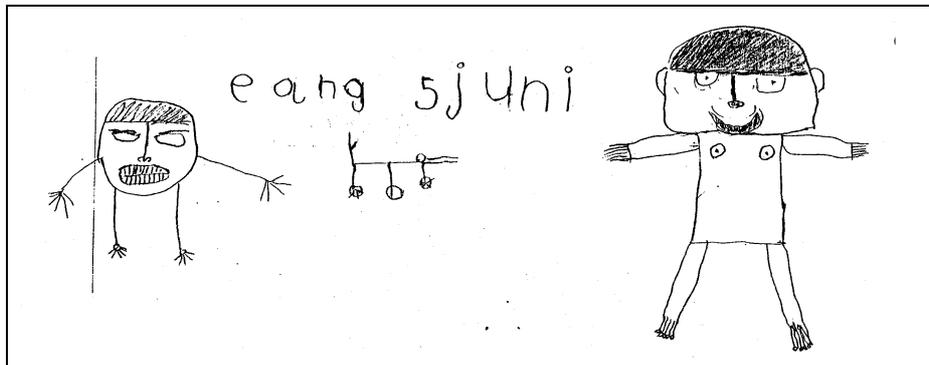
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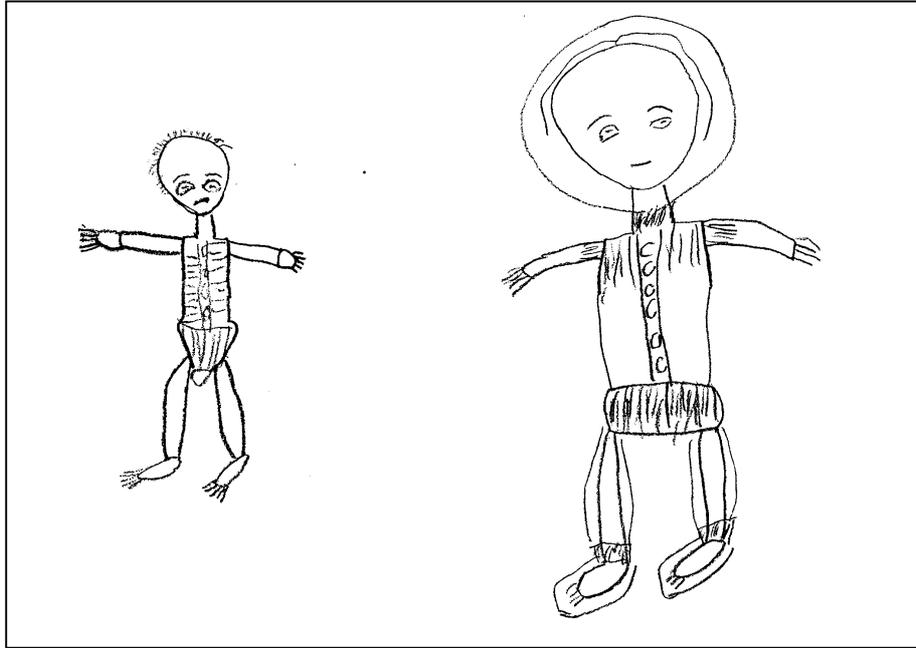
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Drawing by Bya, a 24-years-old literacy student with a Berber background, after one year of courses not only in Dutch and literacy, but also in cycling and sewing. She is mother of two sons. The drawing shows herself with the baby carriage, a man walking a dog (with dog shit on the pavement). The drawing was made in function of a lesson on prepositions (next to, in front of, in, etc.).



Drawing by Eang, a 60-year-old Khmer (Cambodian) refugee, after one year SLA and literacy instruction. She learnt how to read and write her name and the date (June, 5) in Dutch as her second language. It is a double self-portrait, first she represented herself as a stick figure, then, after looking at her neighbor's drawing, as a woman with a laughing mouth, breasts, and a substantial body. In the middle a bike (one pedal between two wheels). The drawing was made in a lesson on transport (How do you get to school?).



Portrait of Fouzia and her baby. The baby is a bit 'skinny', as Fouzia told, because he/she has ten weeks more to grow, so you can only see ribs and bones, the skin is not yet there.

ik ben Karima BOUZAKHTI
 maandag 14-4 april 2008
 niet komen school ik ben afspraak
 met dokter smoren om 10 uur
 2 afspraken om 13 00 uur
 rtfat ziekenhuis
 brief Fam Maria

This letter is written by Karima, a 23 year-old literacy student from Morocco. Her first name and her family name are on the top. She proves to know the functional purpose of writing: sending a message to the teacher when she cannot come to school. She has to see the doctor at ten in the morning; the second visit is to the doctor in the Radboud hospital (rtfat ziekenhuis). She closes off by writing the name of the addressee: her teacher Maria.



Literacy classes in the USA





Literacy classes in the USA





Dutch literacy class





Modern technology in literacy classes



INSTRUCTION, LANGUAGE AND LITERACY: WHAT WORKS STUDY FOR ADULT ESL LITERACY STUDENTS

Larry Condelli, American Institutes for Research
Heide Spruck Wrigley, Literacy Work International

1 Introduction

Adult English as a Second Language (ESL) literacy students lack literacy skills in their native language as well as English communication skills. These learners face the challenge of developing basic skills for decoding, comprehending, and producing print, in addition to learning English. The purpose of the *“What Works” Study for Adult ESL Literacy Students* was to identify ways in which adult ESL teachers can provide effective instruction to improve the English language and literacy skills of ESL literacy students. The study also examined attendance patterns of adult ESL literacy students and class, instructional and student factors related to attendance; and provided descriptive information about adult ESL literacy students, their classes, teachers and the instruction they receive. The study was supported by the U.S. Department of Education’s Office of Vocational and Adult Education and the Planning and Evaluation Service.

2 Study Purpose

Since little is known about adult ESL literacy students, one of the purposes of the *What Works Study* was to present a profile of these adults, their backgrounds and characteristics, and paint a picture of their participation in state and federally funded adult ESL programs. However, the goal of this study was not merely descriptive: it also sought to identify “what works”—the instructional activities that help to develop and improve ESL literacy students’ English literacy skills and their ability to communicate in English. The study’s main research questions were:

- What are the characteristics of adult ESL literacy students? What are their English literacy and language abilities?
- What types of class arrangements and instructional approaches do teachers of adult ESL literacy students use?
- What classroom and instructional variables are correlated with improving adult ESL literacy students’ literacy and language development?
- Does the relationship of class and instructional variables vary according to adult ESL literacy students’ initial literacy level, native language, age or other characteristics?
- What student, program and instructional variables relate to class attendance and persistence of adult ESL literacy students?

- What changes in program design, resources and instruction are needed to implement the instructional approaches most highly correlated with improved English literacy and language development?

The *What Works Study* is the first of its kind: very few research studies have examined the effectiveness of different types of instruction for ESL students, and *no* national study has ever been conducted that linked “educational inputs,” such as teaching strategies, with “educational outcomes” (increases in test scores) for adult ESL literacy students.¹⁶

3 Methodology

The data collection for the project was from October 1999 through August 2001 in 38 classes from 13 adult ESL programs in seven states (Arizona, California, Illinois, Minnesota, New York, Texas and Washington) and had a final sample size of 495 students. The sample included two cohorts of students who were followed from the time of entry into class for nine months. Onsite data collectors assessed students at entry (initial assessment), approximately three months after enrollment (second assessment) and about nine months after enrollment (final assessment), regardless of how long the student remained enrolled. The final assessment allowed us to correlate the total amount of instruction received to student learning and allowed an examination of the persistence of learning gains after enrollment. Data collectors also observed each class an average of nine times over the data collection period and used the guide to code instructional activities with the guide.

3.1 Measuring Instruction: Classroom Observations

Teaching adult immigrants and refugees to become proficient speakers of English *and* to be skilled readers is a complex endeavor and trying to develop a framework for capturing this work was quite a challenge. Teaching ESL Literacy requires a dual effort comprised of instruction in (1) the *language skills* necessary to communicate in English, including subskills related to sentence structure, pronunciation, word endings, tenses; and (2) the *literacy* or reading and writing skills necessary to process print and gain meaning from the written word. We developed a classroom observation guide as a formal way to code and quantify these activities. Guided by theory of literacy and language development and our preliminary class observations, we outlined the learning tasks and teaching strategies associated with both the literacy development and second language development models and developed codes that described the components of learning and instruction associated with them.

The instructional activities measured through the observation guide were quantified, using percent of observed time on the activity and observer ratings of teachers’ use of instructional strategies. We created two categories of measures: *instructional emphasis*

¹⁶ This paper focuses on the findings of instructional variables related to student learning gains measured by standardized assessments. For more detail on the descriptive analyses, results of qualitative assessments, and analyses of attendance patterns, as well as a fuller discussion of the statistical analyses and the research literature underlying the study, see the final report of the study (Condelli, Wrigley, Yoon, Cronen & Seburn, 2003).

measures, which describe the content of the instruction in terms of the language or literacy focus and *instructional strategies*, the activities teachers used to organize and teach the lesson. The following instructional variables were used in the analyses.

While these strategies and emphases characterize how instruction was provided, they were not mutually exclusive or independent of each other. In fact, teachers that used one set of strategies often used combinations of them over time or within a single class session.

(1) *Instructional Emphasis Variables*

- Literacy development emphasis: Main focus on reading and writing development.
- ESL acquisition emphasis: Main focus on speaking, listening, fundamentals of English.
- Functional skills emphasis: Main focus on functional literacy (e.g., interpreting forms, labels, using money, maps).
- Basic literacy skills emphasis: Main focus on print awareness, fluency and basic reading skills.
- Reading comprehension emphasis: Main focus on comprehension strategies.
- Writing emphasis: Main focus on writing fluency, writing practice.
- Oral communication emphasis: Main focus on speaking and listening practice.

(2) *Instructional Strategies Variables*

- Varied practice and interaction: Teachers provide students with opportunities to learn in a variety of ways and modalities (e.g., speaking, reading, writing) and by having students interact with each other.
- Open communication: Teachers are flexible and respond to students' concerns as they arise; ask for open-ended responses; support authentic communication.
- Connection to the "outside": Teachers link what is being learned to life outside classroom and bring the "outside" into the class through use of field trips, speakers, and real-life materials.

Another instructional strategy we coded was the teacher's use of students' native language in instruction. We constructed a scale of the use of this instructional strategy by first conducting a factor analysis of the four measures we used of how native language use was incorporated into classes: to explain concepts, give directions, for students to ask questions and to do written assignments. The analysis identified only one factor, which incorporated all of the measures. We combined these four items into a single index representing the average proportion of use of the four native language instructional activities in each class. The scale ranged from zero (use of no activities) to one (use of all four activities). We then averaged the scores across observations.

3.2 *Measuring Student Learning: Outcome Measures*

One of the biggest challenges in the *What Works Study* was to select and develop assessments to measure the English reading and writing skills of the students in the study, along with their English communication skills. Assessment in adult ESL is complicated by the fact that it requires measurement of skills in two domains: English language proficiency and literacy ability. Knowledge of English is interwoven with the ability to process print. To assess students' knowledge of English, regardless of their ability to read and write, we needed an assessment that measured speaking and listening and did not require reading instructions or finding answers on a printed sheet of paper. Conversely, to find out if students had some ability to read and write in English, we had to make sure that students understood the reading task at hand and were not confused by the language in the instructions. Since the language used in the instructions of a task is often more complicated than the task itself, we gave the instructions orally in the students' native language.

Our research design required using standardized tests, but we wanted to supplement these tests with richer assessments that could measure the type of subtle real life learning that most adult ESL classes provide. To capture the complexities of learning a foreign language, we recognized the need for a multi-dimensional, multi-method approach to assessment. Consequently, the study measured students' English language and literacy development using a battery of standardized and non-standardized tests, selected after a comprehensive review of all assessments available for low-level adult ESL learners. The battery measured reading, writing, speaking, and listening skills. The standardized tests used were:

- The Woodcock-Johnson Basic Reading Skills Cluster (WJBRSC) and Reading Comprehension Cluster (WJRCC), which measured basic reading and comprehension abilities;
- The oral Basic English Skills Test (BEST), measured English speaking and listening;
- Adult Language Assessment Scales (A-LAS) Writing Assessment measured writing ability.

The study also included an interview about student literacy practices in both English and the native language and a reading demonstration task, which measured student English fluency and comprehension through reading of authentic materials. Each assessment was conducted individually and data collectors gave instructions for each test, and conducted the literacy practices interview, in the learner's native language.

4 *Study Findings*

4.1 *Students in the Study*

There were more than 30 languages represented among the students in the *What Works Study*. However, similar to adult ESL students nationwide in the U.S., native Spanish-speakers predominated and approximately 68% of the students in the sample reported Spanish as their first language. Most students in the sample were from Mexico (59%), or from other Spanish-speaking countries (e.g., Guatemala, Dominican Republic, and

Honduras - 8%). A substantial portion of our sample also came from formerly non-literate cultures, including Somalia (10%), and Hmong-speakers from Laos (8%). The average age of students in the study was 40; they were 72% female and had an average of 3.1 years of schooling in their home country. Table 1 summarizes the students in the study by language group and prior education.

Table 1: Education in home country, by language background

Student Language Background	Number of Students	Mean Years of Education in Home Country	SD of Mean Years	Percent of Students with No Formal Education
All participants	490	3.1	2.8	33.1
Spanish - Mexican	285	4.0	2.7	17.9
Spanish - non-Mexican	43	3.8	2.2	11.6
Hmong	38	0.3	0.9	81.6
Somali	47	1.7	2.9	66.0
All others*	77	1.8	2.5	57.1

Note: Prior education data were missing from five students in the final study sample of 495.

*More than 30 other languages are included in this group.

4.2 Reading Ability

The WJR reading battery, the Basic Reading Skills Cluster (BRSC), includes the Letter-Word Identification, and Word Attack (a measure of knowledge of sound-symbol relationships, tested by the ability to read nonsense words) subtests. The Reading Comprehension Cluster (RCC) includes the Passage Comprehension, and Vocabulary subtests. On each of the subtests, items get increasingly more difficult and testing is discontinued after the respondent answers a certain number of consecutive items incorrectly (six or four, depending on the subtest). Table 2 shows student scores, presented as number correct and educational grade level equivalents, on these tests at the three assessment times.¹⁷

¹⁷ Table 2 and subsequent tables reporting assessment results provide the number of students who took each assessment and their mean performance at each time period. There were no statistical differences in the characteristics of students who took each assessment.

Table 2: Mean student scores for the Woodcock-Johnson Subtests for Reading Skills (WJR)

WJ-R Subtest	Initial Assessment (n=481)		3 Month Assessment (n=341)		9 Month Assessment (n=212)	
	Avg. Score	Avg. Grade Equivalent	Avg. Score	Avg. Grade Equivalent	Avg. Score	Avg. Grade Equivalent
Letter-Word	22.6	1.5	25.3	1.7	28.2	2.0
Word Attack	5.8	1.6	6.8	1.8	9.3	2.0
Passage comprehension	4.5	1.1	5.3	1.2	6.8	1.3
Reading vocabulary	2.1	0.9	2.7	0.9	4.3	1.2

Note: Maximum possible ranges for each of the subtests differ and are as follows: Letter-Word 0 to 57, Word Attack 0 to 30, Passage comprehension 0 to 43, and Reading Vocabulary 0 to 69.

4.2.1 Letter-Word Subtest

Students' Letter-Word Activity scores initially ranged from 0-56, averaging 22.6, indicating that students demonstrated reading skills approximately halfway between a first and second grade level. Approximately 30 percent of students initially scored at the kindergarten level or below. Although students were often able to identify drawings (e.g., chair, book), individual letters, and short words such as *in*, *dog*, and *ax*, most multi-syllabic words and words with irregular spellings were very difficult for them. Students' scores increased significantly on this measure over time. By the final assessment, student scores ranged from 2-56, and averaged at the second grade level.

4.2.2 Word Attack Subtest

Initially, students were able to correctly pronounce 5-6 nonsense words (ranging from 0-29 out of a possible 30), indicative of performance at the 1.6 grade level. Although some students were able to correctly pronounce a few of the easier "words," such as *zooz* and *lish*, almost all of them were unable to correctly pronounce the more difficult "words" like *thrept*, *quantric*, and *knoink*. By the final assessment, students were, on average, able to correctly pronounce 9-10 nonsense words correctly (ranging from 0-30) and were scoring at the second grade level. Student's scores increased significantly on this measure over the course of the study.

4.2.3 Passage Comprehension Subtest

At the beginning of study, students were, on average, performing at the first grade level (1.1), with scores ranging from 0-18. Some students were able to match words to the pictures (e.g., *red table*, *little dog*), as well as complete the first few sentences (e.g., *The cat is in the _____*, accompanied by a drawing of a cat in a hat). However, once the sentences advanced beyond the first grade reading level, students had difficulty reading them (e.g., *After a few days, the baby bear could crawl over his _____*, along with a drawing of two bears). Although there was a statistically significant increase in student performance

over the course of the study, the final assessment average grade equivalent increased only slightly to 1.3 (ranging from 0-22).

4.2.4 Reading Vocabulary Subtest

This subtest of the Woodcock-Johnson consists of two parts. For one part, students had to read and provide synonyms for a list of words, for the other parts they had to provide antonyms. Although initial scores ranged from zero to 32, over 53 percent of the students were unable to complete any portion of either task on this subtest. The average raw score was 2 out of a possible 69, which was considered slightly below the first grade reading level at 0.9. Only a few students were able to provide synonyms or antonyms for words such as *mom*, *small*, and *go*.

At the nine-month assessment period the average score rose to 4.3 with a grade equivalent of 1.2 and a range of 0-35; however, over 37 percent of students were still unable to complete any of this subtest. Although there was statistically significant student improvement over time on this subtest, these subtests were clearly too difficult for the ESL literacy students in our study. Learning synonyms and antonyms of words is a school-based task with which literacy students are unfamiliar. In addition, many of the words on the subtest were not high frequency words that ESL learners would be more likely to recognize.

4.3 Writing Ability

The ALAS Writing Test (ALAS-W) consists of two sections, "Sentences in Action" and "Adventures in Writing." For each of the five items of "Sentences in Action," students are asked to write a sentence in response to a target drawing. Sentences are scored on four-point scales, which ranged from zero, indicating no response or an unintelligible response, to three, indicating an appropriate response with no syntactical or mechanical errors. The "Adventures in Writing" section, which involves writing an essay on topics such as "My Best Day" or "My Favorite Sport," is scored on a six-point scale, ranging from zero to five, where "0" indicates no response or a response written completely in another language, and "5" indicates an appropriate, well-organized response in English that contains few errors.¹⁸

Both sections of the ALAS-W presented a challenge for students. Most were able to write few, if any, English words. Words that they were able to provide included nouns and pronouns, such as *he*, *she*, *table*, *party*, *dinner*, etc. It was not uncommon for students to write partially or even exclusively in their native languages. Typically, Hmong students returned blank test forms.

The average raw score on the "Sentences in Action" section initially was 2.9 with a range of 0 to 14 out of a possible score of 15. This average indicates that responses were quite likely to contain errors in both mechanics (capitalization, punctuation, spelling) and syntax. In addition, responses did not usually contain a subject and/or predicate. At the nine-month testing period the average score had increased to 4.3 with a range of 0 to 11.

¹⁸ We trained three project staff members to score all ALAS writing assessments, using procedures described in the ALAS manual. Our raters achieved over 90 percent agreement on ratings.

The average score for the “Adventures in Writing” section initially was .76 with a range of 0 to 4, out of a possible score of 5. This average indicates that responses were likely to be insufficient or completely blank, written completely in another language, mixed with English and the native language, and/or containing isolated words, phrases or dependent clauses with no complete sentences. By the nine-month assessment, the average score increased only slightly to .81 with a range of 0 to 4. This small increase may be indicative of a lack of discrimination by this assessment to detect learning gains in low-level students such as those in the study.

Scoring the ALAS-W includes converting the combined scores of the “Sentences in Action” and “Adventures in Writing” sections into test-defined ESL competency levels. These levels range from 1, indicating “Low Beginner,” to 5, indicating “Competent.” Students in the study initially tested at an average ability level of 1.5, ranging from 1 to 4 out of a 5 possible competency levels. The average nine-month score was 1.6 with the same range.

Table 3 illustrates what students scoring of the low beginner level through high intermediate level could actually write in the “Sentences in Action” section. At the lowest level (low beginner), the student was unable to write comprehensibly. However in this case, some phonemic awareness is evident by the phrase “I go tek dogh,” an apparent reference to the dog being walked in the drawing. In the high beginner example, the student was able to write comprehensibly, albeit with poor spelling and grammar. The student at the low intermediate level wrote an accurate and comprehensible sentence that was mechanically flawed, showing poor spelling for example. At the high intermediate level, the student was able to write a comprehensible sentence with no mechanical errors.

4.4 *English Communication Skills*

The BEST Oral Interview assesses ESL students’ English conversational skills. The test requires a respondent to engage in a simulated conversation, providing name and address, basic personal information and discussing photographs and drawings. Each test item is scored on one of three scales according to the type of skills it measures: listening comprehension, communication, or fluency.¹⁹ The combined raw scores from the BEST Oral interview were converted to student performance levels (SPLs) in accordance with the BEST test manual guidelines. These levels range from Level 0 (No ability whatsoever -- raw score of 8 or less), to Level III (functions with some difficulty in situations related to immediate needs -- raw score 29-41), up to Level VII (can satisfy survival needs and routine work and social demands -- raw score greater than 65).

Table 4 presents the percentages of students scoring within each SPL. Initially, about 70% of students scored at level 2 or lower and over 80% of the students scored at level 3 or lower. This assessment showed significant student improvement over time; by the nine-month assessment, only 40% of the students scored at Level 2 or below and over 30% scored at Level 4 or above.

¹⁹ The BEST Oral Interview also includes measures of pronunciation and a reading and writing score, which we did not use in the study.

Table 3: Samples of scored "Sentences in Action" writing

Example of Score 0 (Low Beginner)



1 My Lon Hmag neeg
Txom dev
Sanve I go tek dogh

Example of Score 1 (High Beginner)



5 BABE IS SIK.
|
|
|

Example of Score 2 (Low Intermediate)



2 the children pley
at the Bedh
2
|
|

Example of Score 3 (High Intermediate)



3 the father is reading
a book to your
children 3
|
|

Table 4: Frequency and percent of Student Performance Levels (SPLs) by time periods for the BEST Oral Interview

Student Performance Levels (SPLs)	Initial Assessment (n=447)		Second Assessment (n=314)		Final Assessment (n=212)	
	Frequency	%	Frequency	%	Frequency	%
Level 0	115	25.7	29	9.2	17	8.0
Level I	77	17.2	47	15.0	17	8.0
Level II	119	26.6	95	30.2	52	24.5
Level III	65	14.6	61	19.4	55	26.0
Level IV	32	7.2	33	10.5	27	12.8
Level V	9	2.0	15	4.8	17	8.0
Level VI	14	3.1	20	6.4	14	6.6
Level VII	16	3.6	14	4.5	13	6.1

4.5 Student Attendance Measures

The study also examined attendance patterns of adult ESL literacy students, using four measures of attendance:

- *Total hours* total number of instructional hours attended;
- *Total weeks* total number of weeks attended;
- *Rate of attendance* proportion of total hours attended out of hours possible to attend;
- *Intensity* average number of hours attended per week.

Each measure of attendance provides us with different information about student attendance patterns. *Total hours* gives us the amount of time the student was in class and exposed to instruction, regardless of how many hours the class was scheduled or how many weeks the student attended. It also does not adjust for how regularly the student attended. *Total weeks* informs us of the length of time a student attended class, regardless of how many hours per week the class was scheduled, how many hours the student attended or how often the student attends. It is a type of persistence measure. *Rate* measures how often the student attended, regardless of how many hours the class was scheduled. It is a measure of how often the student took advantage of the class time offered and may reflect student motivation to attend. Finally, *intensity* is a measure of how much attendance the student had in a given time. It is a measure of the dosage or concentration of attendance time. Intensity is dependent on how the class is scheduled—the amount of class time offered. Consequently, besides measuring student attendance behavior, intensity is a good measure for comparing the differences among classes that spread small amounts of instruction over a long period of time to classes that offer large amounts of instruction in shorter time periods.

Students in the study attended an average of about 16 weeks and 128 total hours. They attended about two-thirds of possible time (rate of 0.64) and just under an average of seven hours per week. Table 5 shows the means on each measure.

Table 5: Overall attendance of adult ESL literacy students (N=495)

	Mean	Median	SD
Total Hours of Attendance	128.7	106.0	94.3
Total Weeks of Attendance	16.2	16.0	8.1
Rate (hours attended/possible hours)	0.64	0.66	0.19
Intensity (hours per week)	6.9	6.3	3.3

4.6 Student, Class and Instructional Variables Related to English Language and Literacy Growth

The study examined the relationship of instructional content, instructional strategies, attendance, student characteristics, teacher characteristics and class variables on student outcomes using a complex statistical technique, latent growth modeling, using a hierarchical linear model (HLM) framework (Bryk & Raudenbush, 1992). The latent growth modeling technique is designed to capture the underlying trajectory of growth that takes places over time. The technique works by using each individual student's data to draw a single, underlying growth trajectory that fits a straight line or smooth curve. The statistical parameters underlying the line or curve can then be used to describe students' literacy growth in terms of their initial status, or where they started, and the rates and direction of change. It also allows us to predict the effect of variables in the model that relate to growth. In other words, using this technique, we can estimate where students were on the measures when they enrolled and how fast they grew on the measures over the course of their class participation. We can also relate this growth to specific variables we use in the model to predict which ones relate to faster (or slower) growth. Findings for the reading and oral language assessments using this technique are summarized below.

4.6.1 Variables Related to Growth in Basic Reading Skills (WJ-BRSC)

The WJ-BRSC assessed students' basic reading skills, including letter-word identification and knowledge of phonics. The analysis also identified several student, class and instructional variables that were significantly related to linear growth, as well as a quadratic effect.

Student Variables

Two student variables, age, and years of formal schooling, were significantly related to growth in basic reading skills. Age was negatively related to linear growth rate, meaning that older students acquired these skills more slowly. Even though younger students started lower on this measure (as shown by the initial status), they made up for their initial disadvantage in basic reading skills by learning faster.

Students' years of formal schooling in the home country was also positively associated with linear growth rate. Students with more education both started at a higher level and learned faster than their less educated peers. Since years of education may reflect students' native language literacy, this result seems to support the theory that students' literacy skills in their native language assist them in developing English literacy. However, students' years of formal schooling in the home country became less important over time. This means that the initial positive effect of formal schooling in

the native country on linear growth fades over time. While prior education initially helps ESL literacy students acquire basic reading skills, this initial advantage does not help later.

Students' oral English skills, as measured by the BEST, were also positively - if marginally significant - related with the linear growth in basic reading skills. This finding may indicate that some proficiency in oral English language skills may work to assist learning of basic reading skills.

Class Variables

The only class variable related to growth in basic reading skills was the length of the scheduled hours per week of class meeting time. Students in classes with longer scheduled hours showed less growth than students in classes with fewer scheduled hours. Other things being equal, including students' attendance and persistence, the longer the class's weekly scheduled meeting hours, the slower the rate of students' learning in basic reading skills.

Instructional Variables

The use of the instruction strategy we called "connection to the outside," where teachers brought real world materials and examples into their instruction, had a positive effect on the linear growth in basic reading skills. The use of this strategy was effective in raising the level of students' mastery in basic reading skills. Figure 1 demonstrates the effect of the connection to the outside strategy on adult ESL literacy students' growth in basic reading skills. For this illustration, we held the other variables constant, using their mean value. The top line illustrates a high use of the strategy and the bottom line shows low use. The increasing steepness, or slope, of the curves illustrates the effect of this instructional variable. As can be seen, the model predicts that all else being equal, the use of the connection to the outside strategy results in an increase in basic skills development over time.

Variables Related to Growth in Basic Reading Comprehension (WJRCC)

The latent growth modeling analysis for the reading comprehension measure, the WJRCC), showed an average steady linear growth over time of about 1.2 points per month. We found statistically significant linear and quadratic growth and to students' initial status at enrollment in class. The model identified significant student, class, attendance and instructional measures related to growth in reading comprehension.

Student Variables

We examined within the model the relationship of students' basic reading skills at entry in class on growth in reading comprehension. The analysis revealed both a significant negative linear growth and a positive quadratic growth curve. We interpret this finding to mean that the reading comprehension of students with higher BRSC scores at class entry grew very little at first, but over time this growth accelerated more dramatically. In contrast, students with little or no basic reading skills at entry showed a small amount of growth initially, but then failed to improve their reading comprehension skills over time. In other words, adult ESL literacy students who entered class with some basic reading skills showed significant growth in reading comprehension compared to students who had little or no basic reading skills, but this took time to

appear. Initially, students with low basic reading skills improved slightly, but then later showed no growth in their reading comprehension skills.

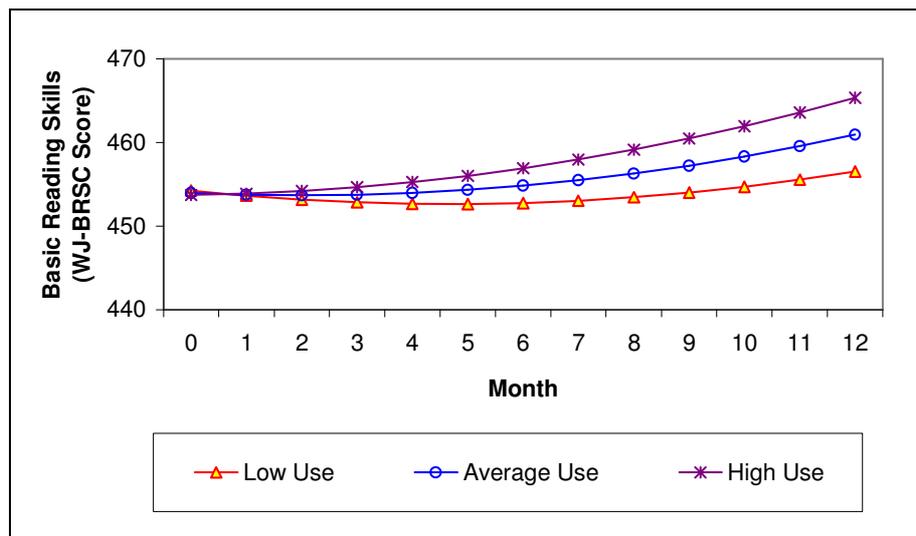


Figure 1: Effect of the use of the "Connection to the Outside" strategy on growth in basic reading skills

Attendance and Class Variables

The model identified the rate of attendance (proportion of hours actually attended to scheduled hours) as positively related to linear growth in reading comprehension. The coefficient of 0.02 for the attendance rate means that there was a 0.2-point increase per month with each 10 percent increase in attendance rate. Note that this positive relationship was significant even after controlling for the total attendance time in hours. Thus, students who attended more regularly improved their reading comprehension skills, no matter how many hours they attended. The scheduled length of class in hours per week was also related to positive growth in reading comprehension. Students in class with more scheduled hours per week had more growth in reading comprehension.

Instructional Variables

The use of a native language in class, a measure of how teachers used the students' native language for clarification during instruction, had a positive effect on the linear growth in reading comprehension. In other words, the more teachers used students' native language to do such things as give directions about class activities or to clarify concepts, the faster students' reading comprehension grew. The coefficient of 3.44 for the variable can be translated to a gain of 8.2 points over a year with a 20 percent more use of native language.

To illustrate our findings from the growth model, we created three pairs of growth lines, shown in Figure 2: high and low level of incoming basic reading skills, high and low rate of attendance and high and low use of native language in the class. For each,

pair, we held other variables in the model constant. The differences in the slope or steepness of the lines indicate the strength of each variable's relationship to reading comprehension growth. For example, the effect of low and high attendance rates, all else being equal, can be clearly seen from the sharp divergence in the two attendance rate lines that begins after about three months. We also combined high levels of all three variables (the top line in Figure 2) to demonstrate their combined effects. As can be seen, the rate of growth in reading comprehension is very steep when students enter with higher basic reading skills, attend at a high rate and when the teacher enhances instruction using the students' native language.

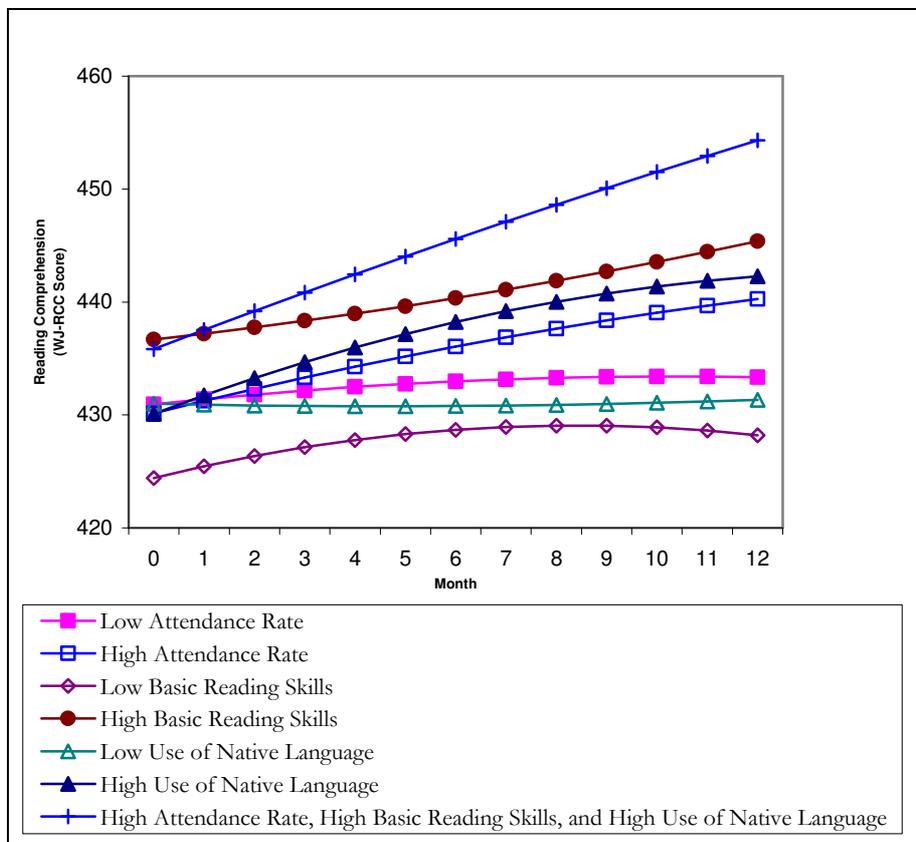


Figure 2: Effects of attendance rate, basic reading skills, and use of native language on growth in reading comprehension

4.6.3 Variables Related to Growth in Oral English Language Development (BEST)

The growth curve model for ESL literacy students' oral language skills measured by the BEST test showed that there was significant linear growth and a significant quadratic trend, meaning the linear trend tapers off over time. The mean BEST total scores

started at 23.7 and increased at a rate of about 2.2 points per month for the first three months, or about 6.6 points. However, due to the growth deceleration, the model showed it would take the next six months to achieve the same amount of gain. The results of the growth curve modeling show that many student, class attendance and instructional measures were significantly related to linear growth and this quadratic trend in development of oral English communication skills.

Student Variables

Students' age had a small negative relationship to linear growth in oral English skills, as measured by the BEST. Younger adult ESL literacy students acquired English speaking and listening skills at a slightly faster rate than their older counterparts. The model predicts that a 20-year-old student would gain 0.4 more points more per month on the BEST compared to a 40-year-old student, all other variables being equal. Since younger students also tended to have slightly better oral English skills at the start of class, this age gap only widens over time.

Students with higher basic reading skills when class began, as measured by the Woodcock Johnson BRSC, were positively related to BEST scores initially (i.e., initial status) and were positively related with linear growth in oral English skills. This finding means that the better basic readers started higher and learned English oral skills faster than their less reading-skilled peers.

Attendance and Class Variables

As with the reading comprehension measure, rate of attendance was significantly related to positive growth in oral English. Other things being equal, including the length of class and the total amount of attendance hours, students who attended more regularly (i.e., with higher attendance rate) learned oral English at a faster rate than students who attended less regularly. The model also showed that the scheduled length of class in hours per week was positively associated with linear growth rate. In other words, the longer classes promoted faster growth in oral English acquisition.

Instructional Variables

The growth model revealed three instructional factors that were positively related to improvement in oral English. Students in classes where more time in instruction was spent on oral communication development activities (such as pronunciation practice, conversation practice and dialogue drills) grew faster than students in classes where this type of instruction was provided less often.²⁰ The use of native language as instructional support also helped students learn oral English faster, as did increased use of the varied practice and interaction strategy.

In Figure 3, we illustrate the growth curve model predictions for two of the instructional variables. Holding other variables constant, we compared the growth lines for low and high emphasis on oral communication instructional activities and low and high emphasis on the varied practice and feedback strategy. We also show the projected growth when both strategies are used at a high level, all else being equal. The

²⁰ Students in such classes not only grew faster on this measure, but also started at a lower level. Students with lower oral skills were more likely to be in classes with an oral communication emphasis, probably due to placement procedures of programs.

slope or steepness of the line indicates the relative effects of these instructional emphases.

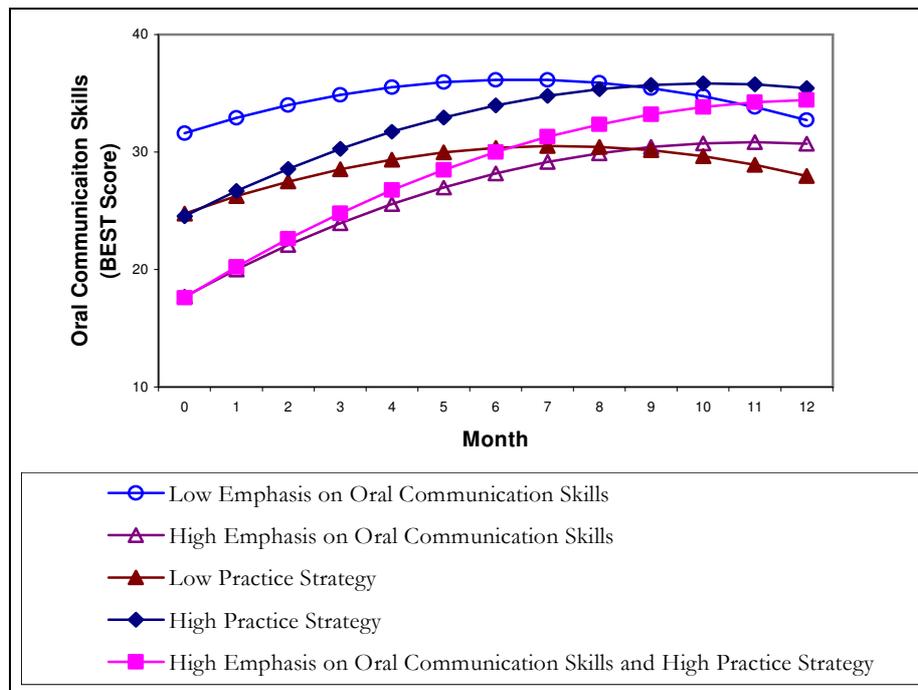


Figure 3: Effects of instructional emphasis on oral communication skills and practice strategy on growth in oral communication skills

Other Assessment Measures

No instructional or class variables were related to student gains in writing. In fact, there was very little improvement in student's writing skills over the study period. We did find gains in students' self-reported literacy practices, measured through interviews, and gains on our reading demonstration task. However, we were unable to relate these gains to instructional practices in growth modeling analyses. No teacher characteristics were found to be statistically related to any outcome measure.

5 Summary and Discussion of Main Findings

The *What Works* study was successful in achieving its main goal of relating instructional strategies to student learning. Through the growth modeling approach, we found that three instructional strategies: connection to the outside world, use of the student's native language for clarification in instruction and varied practice and interaction, were related to growth in student literacy and language learning. Table 6 summarizes the main findings related to instruction and program practices. These instructional

strategies encompass a range of teaching activities, which we discuss below, along with an interpretation of why these strategies were effective. We conclude with a summary of findings related to student variables and suggestions for further research.

Table 6: Key findings related to instruction, program practices and students

Instructional Practices	<ul style="list-style-type: none"> • <i>“Bringing in the outside”</i> Students in classes where teachers made connections to the “outside” or real world, had more growth in reading basic skills development • <i>Use of the students’ native language for clarification</i> Students in classes where teachers used students’ native language for clarification during instruction (e.g., to explain concepts and provide instructions on class work) had faster growth in reading comprehension and oral communication skills. • <i>Varied practice and interaction strategy</i> Use of this strategy, where the teacher taught concepts in a variety of modalities and allowed student interaction, resulted in faster growth in oral communication skills. • <i>Emphasis on oral communication</i> Students in classes where the teacher explicitly emphasized oral English communication skills in instruction had more growth in this area.
Program Practices	<ul style="list-style-type: none"> • <i>Scheduled class length (in hours per week)</i> Longer scheduled classes resulted in more growth in reading comprehension and oral communication skills, but less growth in basic reading skills. This suggests that teachers should not overemphasize basic reading skills for too long of a time, but move on to higher level reading skills or other language skills.
Student Factors	<ul style="list-style-type: none"> • <i>Rate of attendance</i> Students who attended a higher proportion of scheduled time (in hours) had more growth in reading comprehension and oral communication skills. • <i>Prior education and skills</i> Students with more years of education and higher incoming English language and literacy skills had more growth, although the effect of years of schooling was limited to growth in basic reading skills development. • <i>Age</i> Younger students developed basic reading and English oral communication skills faster than older students.

5.1 Connection to the Outside: Using Materials from Everyday Life

One of the key findings of the study was that connecting literacy teaching to every day life made a significant difference in reading basic skills development. To implement this strategy, teachers used materials from daily life that contained information that students wanted to know about or with which they had some experience. For example,

a teacher might bring in grocery flyers from different stores and ask students to compare prices or use phone and electricity bills, letters from schools or immigration authorities, and other items that appear in students' mailboxes to highlight literacy for adult contexts. Using authentic materials in this way, teachers can help build vocabulary skills, build background knowledge that helps students negotiate different types of document literacy and increase reading comprehension skills.

Activities of this sort might foster literacy development by linking new information to what learners already know and by engaging the learner in topics of interest. By starting with familiar materials that are of interest to learners and by creating situations for cognitive involvement, teachers can create interest, maintain high levels of motivation, engage students' minds and through this process build literacy skills that have importance in the lives of adults.

5.2 Use of Students' Native Language for Clarification

Our study showed that in classes where teachers used the native language as part of instruction to clarify and explain, students exhibited faster growth in both reading comprehension and oral communication skills.²¹ Since the directions for a language and literacy task are sometimes more complex than the language required by the task itself (e.g., "write your name and the date on the upper right hand side of the paper"), students who received clarification in the native language were able to focus on the task at hand and the confusion and anxiety of not understanding the instructions were reduced.

5.2.1 Creating a Safe Learning Environment

Another reason why using both English and the native language in the classroom was effective may be that many of the learners, particularly along the U.S. – Mexico border, have become convinced that English can only be learned through a reliance on translation and are reluctant to use English outside of the classroom for fear of not understanding or not being understood and therefore subject to ridicule. They may have lost confidence in their ability to get a point across in imperfect English or to understand a message if not all the words are understood. For these students, having a teacher who shares their language means being able to ask questions in a language they understand and having the security that access to the native language provides. Being in a classroom where the native language is used may provide less of a linguistic and more of a psychological advantage. Free from the anxiety of having to survive on English only in the classroom, these adults now have the opportunity to focus on learning and take in more information than otherwise possible. These explanations, however, must remain speculative, since we collected no data directly on these topics.

²¹ The *What Works Study* did not include bilingual classes or native language literacy classes, where the home language of the students is the language of instruction and the target is acquisition and improvement of literacy in a language other than English.

5.2.2 *Teaching Critical Thinking Skills*

It seems clear that we cannot think critically in a language we cannot understand. Beginning ESL literacy students are not able to discuss options or articulate opinions to a deep level if they still struggle with holding even a basic conversation in the new language. They may be able to understand a simple scenario presented to them, but they will be hard pressed to discuss the situation in detail or suggest more than the simplest course of action.

Yet these types of situations present themselves daily to immigrants and refugees since the problems of real life do not wait for English to catch up: children have to be enrolled in school, supervisors need explanations and newcomers get lost. By giving students a chance to use their own language in discussions, teachers can help students think about the situations that might confront them and can encourage them to work with others to brainstorm ideas, discover options and think about consequences. By mixing the use of English with opportunities to use the native language where appropriate, the learning English can be reinforced. This may be the process by which oral communication skills and reading skills improved, although again we can only speculate due to lack of data on this issue.

5.3 *Varied Practice and Interaction*

The reason for the relationship of varied practice and interaction to language learning may be that learning how to communicate in English is a challenging process that requires different sets of knowledge: an understanding of sentence structure, grammar and syntax; a good sense of how written language reflects oral language (phonology); the ability to interpret and use word endings that change the meaning of an expression and a rich vocabulary. In other words, students need a good sense of “how English works” to understand what is being said and explain their ideas in ways that at least approximate Standard English. Finally, communication requires a good sense of what is appropriate in any given situation, a sense of socio-linguistic competence.

While it is entirely possible to learn English on one’s own and slowly sort out the intricacies of the language, the process may be aided by a teacher who draws students’ attention to certain patterns and rules when appropriate and gives students a chance to talk in class without having to worry about accuracy at every step. While there is definitely a place for direct teaching in the ESL literacy classroom, it is easy for students to become overwhelmed. Adults who did not study English formally in school often have difficulties understanding concepts such as “subject” or “direct object” and too much overt grammar teaching can frustrate both students and teachers. Setting time aside, however, to demonstrate to students how English works and to practice language in meaningful ways appears to pay off in terms of increasing oral proficiency.

Students and Teachers

In examining the relationship of student background characteristics to English literacy and language development, we found that students’ amount of formal education was related to growth in basic reading skills. While all of the students in the study had very little formal schooling, the more schooling they did have, the greater their development of basic reading skills – at least at first. This initial advantage of schooling faded over time. It may be that students with more prior schooling in their native language had

some knowledge of basic reading that they were able to transfer to English, enabling them to learn faster. Students with less schooling struggled initially, but eventually caught up to their more educated peers.

Students' English language and literacy skills when they started class also were related to their subsequent learning. Students with higher basic reading skills (as measured by the WJR pretest) developed reading comprehension and oral communication skills faster than their peers. Similarly, students with higher initial English oral communication skills (as assessed by the BEST pretest) improved their basic reading skills faster.

Students' age was also an advantage to developing English oral communication and basic reading skills. Younger students developed these skills faster than older students. However, there was one assessment where older students had the advantage: the reading demonstration task. Older students tended to perform better over time reading the real-life, authentic materials (e.g., bill, labels, signs) used in this assessment than younger students. This intriguing finding may be due to the greater experience older students may have with these materials.

We also looked at whether teacher background and training had an effect on adult ESL literacy student learning. We found that no teacher variables were related to any of the student outcome measures used in the study. However, the 38 teachers in the study were relatively homogeneous. They were generally new, inexperienced teachers and although well credentialed, had little training or professional development in teaching adult ESL or ESL literacy. These factors made it very difficult to find statistically significant effects for teacher characteristics.

6 *Suggestions for Further Research*

The *What Works Study* employed a quasi-experimental methodology, where we collected student outcome measures at three points in time. We used statistical modeling to measure language and literacy growth, while controlling for the influence of other measures. This powerful approach is widely used in educational and psychological research and meets a high level of scientific validity. However, since we did not employ experimental manipulation, we cannot state definitively which specific instructional practices will produce the outcomes we observed. For example, while our findings allow us to say that "bringing in the outside" teaching strategies are related to growth in adult ESL literacy students' basic reading skills, the study design does not allow us to say which *specific* instructional practices, among those described in the previous section, will *cause* these students' basic reading skills to improve. To make this type of inference experimental research, with random assignment, is needed.

One possible approach for an experimental follow-up study would be to take instructional strategies the study found related to student growth – varied practice and interaction and bringing in the outside, for example – and train teachers on specific methods to implement the strategies. Students could then be assigned randomly to teachers, who would employ the different techniques. By comparing student learning in the different classes, the more effective methods could be clearly identified. This methodology would allow research to identify definitively the methods more likely to result in literacy and language growth. A broader range of adult ESL literacy students could also be included in this type of study, to allow broader generalizability.

The study methodology and approach limited our ability to examine the effect of teachers on adult ESL student learning and to define the characteristics and behaviors of good teachers. Yet, the importance of a good teacher is widely acknowledged and adult literacy students often identify their teacher as instrumental to their learning. In addition to focusing on instructional methods, a future study could identify teacher variables that affect student learning. Such variables might include training, background and pedagogical approach of teachers, as well as the interactions between teacher and learners. The findings from such a study would provide guidance on how to train teachers and promote good teaching practices in the classroom.

While the study has demonstrated that instructional practices in adult ESL literacy class are related to language and learning growth, most students spend relatively little time in class. For example, we found our students attended an average of about 129 hours over 16 weeks. Adults in these classes clearly rely on their environmental exposure to English and other methods of learning, in addition to classroom instruction, to acquire literacy and language skills. Such factors as the community in which learners reside, personal and family situation, employment, personal motivation, and literacy practices and needs also affect learning.

Future research could also explore approaches to assessing adult ESL literacy students. As we found, the assessments available for these students for instruction, research and accountability purposes range from non-existent to inadequate. Empirical work to identify assessment approaches and to develop and evaluate new assessments would greatly benefit the field at all levels. Teachers need these tools to design appropriate instruction, researchers need them as outcome measures and administrators need a gauge on student progress for accountability.

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PREPARING TEACHERS TO HELP LOW-LITERACY ADULT ESOL LEARNERS

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1 Introduction

Across the United States adult immigrants that do not speak English attend ESOL (English for Speakers of Other Languages) classes in publicly-funded adult education programs. These classes are generally free or at very little cost to the learners, and frequently held in the evenings. Each state receives federal funds to provide these educational services and distributes them accordingly to programs within the state that meet their criteria for program standards and requirements for assessment and accountability. The programs vary in size, learner ethnicity and other characteristics, curriculum, structure, entry dates, and not least of all, level of expertise of the teachers.

Many of the teachers that work with the ESOL population in these publicly-funded adult education classes, unfortunately, are untrained in working with the low-literate adult population. In fact, the majority have little training in teaching ESOL to adults in general, before they begin in the classroom. On a frequent basis in-service workshops are held for these teachers so that they can acquire the skills and knowledge to help their students learn English in order to successfully participate in their new communities, at work and at home.

In Virginia these professional development workshops are provided by the Virginia Adult Learning Resource Center (VALRC) at no cost to the programs or teachers. The VALRC is the professional development entity of the Office of Adult Education and Literacy of Virginia's Department of Education. Its vision is that every adult education and literacy practitioner and organization has the tools to help build a better future for its learners. It provides adult education and literacy resources, publications, and training for teachers of adults in Virginia.

As the ESOL Specialist at the VALRC, I am charged with providing support for Virginia's ESOL adult education programs and their staff in the areas of professional development, assessment, curriculum, and instructional resources. I organize trainings around the state, create curricula, disseminate the latest research that reflects best practices and generally respond to programs' needs and demands. The needs of the programs and teachers around the state vary from region to region. In the next sections I first present some demographics about Virginia, and after that I describe how the Virginia Adult Learning Resource Center tries to support teachers in the different regions in doing their jobs.

2 Demographics

Table 1 presents some statistics of the population of adult second language learners in Virginia. Virginia has a total population (5 years and over) of almost six million with 4,741,805 over the age of 18 years and 127,015 of these speak English “not well” or “not at all”. Of this last group 44,565 (35%) have less than a 9th grade education while only 5,015 (4%) hold a graduate or professional degree. In the labor market 24,855 (35%) are employed in service positions while only 8,260 (11.5%) work in management or professional jobs. The number of linguistically isolated households is 24,805; in other words, in 65% of English Language Learner (ELL) households no-one speaks English.²²

Table 1: Percentages of ELL population in Virginia related to education and occupations

Demographic	Number	Percentage
Total population (5 years +) of Virginia	4,741,805	100 %
ELL adult population (18 years +) (does not speak English well or at all)	127,015	2.7 %
ELLs with < 9 th grade ed.	44,565	35 %
ELLs with grad. or professional degree	5,015	4 %
ELLs with management + professional jobs	8,260	11.5 %
ELLs with service jobs	24,855	35 %

The ESOL programs are trying to reduce this percentage of homes in which no-one is able to speak English. Each year the number of students enrolled in adult education classes rises. The majority of the students in these classes are at the beginning levels with approximately 48 % at the lowest levels of proficiency. In fact, 19% of them are at the beginning literacy level and the number at this level increases with each year (see Table 2). The levels ‘beginning ESL’ to ‘advanced high ESL’ are more or less comparable to what in the European context is called level A1, A2, B1, B2 and C1 respectively (see Janssen-van Dielen, this volume) .

Table 2: Adult ESOL program enrollment 2004-05 (Annual report, Office of Adult Education and Literacy, Virginia Department of Education, 2004)

Levels	Number of students
Beginning Literacy	2,428
Beginning ESL	3,122
Intermediate Low ESL	2,486
Intermediate High ESL	1,972
Advanced Low ESL	2,103
Advanced High ESL	909
Total	13,020

²² Statistics taken from: U.S. Department of Labor, Employment & Training Administration, Special Tabulation of LEP Information from Census 2000, <http://www.doleta.gov/reports/CensusData/>

If you compare the total number of adults in Virginia that do not speak English well or at all (127,015) with the number of adults enrolled in our adult education programs (13,020), it is obvious that we are only serving 10.3 % of our potential learners. Also to be considered are the large number of immigrants, mostly migrant workers, that are undocumented. Consequently, these workers that live in the shadows go unreported. They are not included in the total official number of potential learners which would swell immensely if they were.

3 *Challenges of Emerging Areas*

In Northern Virginia, close to Washington, D.C., there have been for several decades many immigrants from hundreds of countries. In some of the cities, the number of immigrants can be from one quarter to over one half of the population. The areas of southeast Virginia (the Tidewater area), northwest (Shenandoah Valley) also have large immigrant populations. The educational level of these immigrants is mixed. Many possess graduate degrees from their home countries while others may not have had much formal schooling in their home countries. The level of expertise of the teachers in these areas is generally very high in the publicly-funded programs. Many of these teachers possess graduate degrees in Teaching English to Speakers of Other Languages (TESOL) and even develop and publish curricula, participate in research studies and disseminate their findings.

In other regions, such as the rural southwestern and southern portions of the state, newcomers have been slow to arrive. These new settlers, by and large, are from Central and South America and have low levels of literacy. It is in these regions that programs are beginning to see the influx of non-English speakers into the adult education classes where up until a few years ago the learners had only been native speakers. Programs and teachers are faced with new challenges on a daily basis. Not only do the teachers have less experience, but the learners themselves present added demands since they cannot read in any language and cannot speak English. And at the state level we are faced with the challenge of disseminating the latest results from research that will provide these teachers with models for best practice.

As mentioned, until now the ethnic populations in many regions of the state, except for Northern Virginia, have been in the main homogenous, a mixture of European descendents and Afro-American. These regions are dotted with farms and rural communities. During the last decade emerging populations of immigrants that do not speak English have become visible. This influx of immigrants is a new phenomenon that has economic and social repercussions. New demands are placed on educational, health and social services. Unlike the more cosmopolitan immigrants of Northern Virginia, the newcomers that are settling there tend to be less-educated, agricultural workers. The majority are from Mexico or Central America where they only attended school until the third grade. Although many do learn some oral English, they struggle to read and write in it.

The educators working in adult education do not have experience or training to work with this low-literacy adult immigrant group. In fact, the majority of the practitioners have no preparation or experience in teaching English to speakers of other languages at all.

4 Services and Resources Provided to Promote Professional Development

Until recently the teaching of ESOL, both to children and to adults, has been largely ignored in the United States as a professional field of endeavor. The reasons for this range from a general belief that anyone can teach their own language to the previous paucity of academic foundational studies in linguistics that carry practical implications to the classroom in which life-skills is the focus. Adding to this, as mentioned before, the increasing influx of non-English speaking immigrants who are in urgent need to be served, most programs will hire inexperienced and untrained teachers. Although many universities across the nation have recently initiated certificate and MA programs for TESOL, they focus on the teaching of the structure and forms of the language and/or are geared towards Pre-K-12 (Pre kindergarten through high school) instruction.

For many years the ESOL classroom offered instruction using a traditional model that was teacher-centered and textbook-driven. It focused on grammar lessons, emphasizing accuracy above fluency. Strikingly, it presupposed high literacy and grammatical awareness in L1. The language learning activities were usually repetition or substitution drills, comprehension questions, and fill in the blank worksheets. These were done individually or as a whole class responding to the teacher's modeling or questions. With the growing acceptance of the new research-based methodologies for language teaching and acquisition, however, these teacher and grammar-centered instructional strategies were abandoned for more communicative ones. These, in turn, required that appropriate teacher training in these new methodologies be conducted.

4.1 Practitioner Profile and Needs

Surveys conducted a few years ago plus anecdotal information suggest that the majority of ESOL instructors have one to two years of experience and are part-time. Many teachers come from a K-12 (kindergarten through high school) background, thus do not have experience in working with adults or the knowledge about adult learning theory. Ninety-nine percent have a bachelor's degree. Although some of the teachers have experience teaching native English speakers how to read or to prepare them to pass the test to obtain the (GED) General Educational Development diploma, many have never taught a language. Frequently, the ESOL teachers are retired school teachers or just retirees with a desire to help their community.

Taking in mind the above characteristics of these teachers, at a meeting in late 2004, 24 regional representatives were asked to complete a survey about their possible professional development needs. They were asked some general questions about their regions, e.g. number of ESOL programs, type of population, and other demographics and other questions dealing with staff development needs. The results indicated that the majority of teachers preferred workshops in teaching multi-level classrooms, assessment, and implementation of instructional strategies. When asked what other types of professional development opportunities, aside from workshops, would be useful and of interest, they overwhelmingly responded that they would prefer participating in curriculum design and development and sharing lessons and ideas electronically with colleagues. Their answers provided useful input in the planning of professional activities for the following year.

4.2 Workshops, Blackboard and Other Resources

Faced with these new challenges the local school systems seek help from the state department of education. Because they are distant from the state offices located in the capital, Richmond, the VALRC must reach out to them. The staff at VALRC works to address needs demonstrated and expressed by the practitioners and program managers for all types of adult educators and programs, not only ESOL, by providing staff development and resources. The services that we offer in adult education are: new teacher training for Adult Basic Education teachers and ESOL, professional development either through face-to-face workshops or distance learning, professional newsletters, GED (General educational Development) assistance, technical assistance to programs, a clearinghouse of resources, a web site <http://valrc.org> and publications. These are provided without charge to Virginia Adult Education and Literacy providers.

Although we serve all practitioners and programs of adult education, increasingly more efforts are being concentrated in the area of ESOL. Approximately, 48% of all adults enrolled in adult education classes in Virginia now are ESOL learners. We do not have available a breakdown of how many educators are ESOL teachers, but we do know that their numbers are far less than those that work with native speakers. Obviously due to the emerging demand for ESOL classes, we must do more to create positions for ESOL teachers and to provide them with the necessary instructional knowledge and skills.

Currently, in order to assist these inexperienced teachers and to provide them with the latest in research-based best practices, the VALRC organizes and funds regional and local workshops. Expert trainers are sent out to all regions of the state to facilitate day-long workshops in a variety of topics, including ESOL Basics and training in implementing assessment tools. These are generally well-attended, but they are certainly not enough to prepare the teachers well. Additionally, three times a year we offer an eight week facilitated asynchronous online course, entitled ESOL Basics, which has been extremely popular for new teachers. This is conducted through an online course management system, Blackboard, hosted by the university web server. Any adult ESOL practitioner in Virginia can take this free course. The curriculum content of the ESOL Basics Online explains how to identify characteristics of adult ESOL learners, introduces effective methods of teaching languages, focuses on teaching life-skills, provides strategies for teaching multi-level classes, and addresses how to teach the four language skills and how adults learn another language. Facilitators, available to help you throughout the eight-week course, lead you through the content and technical aspects of the course. Each week's lesson addresses a topic in ESOL instruction. Course activities include readings, assignments, and discussions. The lessons are sequential. Lessons and resources included in the course are the following:

- Characteristics of ESOL Learners
- Methods and Needs Assessments
- Lesson Planning
- Teaching Speaking and Listening
- Teaching Reading and Writing
- The Integrated Lesson
- Professional Development
- Wrapping Up

Completion of the course is designed to require a minimum of 32 hours; approximately four hours for each of the eight topic sessions. In order to receive the certificate for participating in the ESOL Basics training, participants must complete all assignments, respond to the discussion postings of the facilitator, and respond to one of their classmates at least once in each discussion.

Each year during the summer intensive institutes, of two to three days duration, are held at different colleges around the state. The one held in Northern Virginia, which follows a conference format with workshops and presentations, is extremely popular. Smaller, but still popular, are institutes that are organized to explore in depth a central theme, such as teaching in a multilevel classroom, workplace ESOL or starting a new ESOL program.

Also, on our very extensive web site, <http://www.valrc.org>, we have numerous publications and resources for teaching ESOL made available at no cost to Virginia residents. One of these is the *ESOL Starter Kit* which has over 200 pages of background readings and resources for new teachers. Another is the *Virginia Adult Education Health Literacy Toolkit* that includes the links to online curricula available to ESOL teachers for helping their students learn to manage the health care system. Others are: the *Fairfax Family Literacy Curriculum*, the Fairfax EL/Civics Curriculum, and the *1999 REEP Family Literacy Curriculum*.

Except for our website, the online publications, the newsletters, ESOL Basics Online, most of our professional development offerings are face-to-face trainings. These require travel by the participants and/or trainers and can be costly to the state government to fund.

4.3 Graduate Certificate for Teaching Adult ESOL

Since 2004 the offering of a *Graduate Certificate for Teaching Adult ESOL* has been in the works. The goal of the certification process is to prepare Virginia educators to provide adult non-native speakers of English with competency-based, research-driven English language instruction.

There is a need to establish a graduate program for preparing teachers to teach competency-based English for the ever-increasing number of adult immigrants and refugees arriving each year who need to learn English in order to survive and provide for their families. These adult immigrants, for the most part, are not interested in pursuing higher education, but rather need everyday English. The learner-centered curricula and instruction offered in the state funded programs are based on the life-skills these adults must acquire to become active participants in their new communities. The concentration on life-skills distinguishes this type of instruction from that provided for children or for those only interested in learning English for academic or business purposes. It stresses problem-solving and learner interaction around many topics which are needed and requested by learners but not often found in textbooks, such as using credit, accessing community services and finding affordable health care.

Instead of the traditional way of teaching, the life-skills based ESOL methodology is learner-centered responding to the learner's immediate survival needs. The learners' needs, which are assessed by the teacher at the beginning of the instructional period, drive the course content. They generally work cooperatively in pairs or small groups since there is an emphasis on mastering fluency with the new language (i.e. ability to communicate). The learning tasks prepare the learner for communicating in everyday

situations. Lessons on grammar may be included to provide support but always relate to a skill being mastered. The materials represent real-life contexts (housing, health, community) and there are extra supports for low-literacy learners in the form of pictures, easier worksheets, working with the alphabet, and cloze exercises.

As mentioned earlier, few ESOL teachers for adults in Virginia are prepared to facilitate classes using the appropriate research-based curricula supporting competency-based instruction required by their programs. In response to this need, the Virginia Adult Learning Resource Center has proposed the creation of a certificate program in the teaching of adult ESOL which would satisfy the requirements for an add-on endorsement in Adult ESOL to the K-12 Virginia teaching license, provide courses that lead towards a masters in education, and constitute the program of study for a certificate in teaching ESOL to adults.

Since one of the major obstacles to professional development, especially for those that reside in the emerging areas of ESOL and with the greatest needs, has been their isolation and distance from the capital, we decided that the certificate program should incorporate distance learning. The suggested modality for the program is a blended one that would include one or two face-to-face sessions for each module while the rest of the course material will be facilitated online through Blackboard, a course management software. The face-to-face sessions would be held on the weekends in a central location. This choice of modality would enable teachers from distant regions of the state to participate.

The program will last from one and a half to two years. The variance will depend on length of each module and breaks between these. The modules may be seven to ten weeks in length. The courses to be part of the program are:

- Orientation (especially in the use of online technology)
- Second Language Acquisition
- English Linguistics for Adult ESOL Instructors
- Cross-cultural Education
- Methodology in Adult ESOL
- Adult Second Language Instruction
- Teaching Reading/Literacy to Adult English Language Learners
- Practicum along with three formal observations and six peer observations

When the teachers are not attending the face-to-face sessions, they will be required to participate in the online component of the course administered through Blackboard. They will need to complete the course readings (some of them available online), submit assignments, post questions and answers, and take part in any discussions. They can communicate with the instructor, the whole class or only certain classmates. Study groups can be formed in which only members of these groups can electronically communicate with each other within the system. Within each course syllabus there are one or more components that link theory to everyday practice. For example, in Methodology in Adult ESOL, by the completion of the course, participants should be able to:

- Apply current theories and approaches related to the practice of teaching adult English as a Second Language.
- Design language-learning activities that correspond to life-skills functions and contexts encountered by adult ESOL learners.

- Use a variety of research-based methods and techniques for teaching reading, writing, listening, and speaking to adults.
- Tailor instructional activities and techniques for students with limited formal education.
- Understand the special learning needs of refugees, senior citizens, and individuals with learning disabilities and employ appropriate teaching strategies.
- Use different forms of technology in the classroom and assist students with computer usage.
- Identify "best practices" in ESOL instruction, staff development, and materials for learners.
- There is still much work and preparation for establishing this certificate program.

Hopefully, by the fall of 2007, we will be able to initiate it.

5 Research to Practice

In conclusion, what teachers need is to be able to access to scientifically-based research on second language acquisition in adults, especially in adults with little L1 literacy. Since the majority of our adult ESOL students are at the Literacy or Beginning levels, teachers need to have the relevant research articulated to their practice. Where should teachers begin? Are the sequences for learning to read the same for adults as for children? What are the differences in learning to read for a native speaker and a non-native speaker of English? How does oral literacy influence learning to read? What exactly are "best-practices"?

The teachers need to obtain this information, reflect on its applicability to their own practice, and implement the research-based instructional strategies in their classrooms. To begin with they need recourse to relevant research, research conducted on populations that are similar to the students that they work with. As the specialist for ESOL staff development it is my responsibility to get this pertinent information out to the teachers across the state. Until recently, there has been little research done in this area so there has been little to disseminate to them. Dr. Larry Condelli, Managing Director at the American Institutes for Research in Washington, D.C., and colleagues (2003) however, conducted a seminal work, *Effective Instruction for Adult ESL Literacy Students: Findings from the What Works Study*, that gives critical insight into providing instruction based on research. Currently, he is conducting another project, *Explicit Literacy Impact Study*, which will also be central to guide emerging methodologies for this population. Special curricula for low-literate learners have been developed by the VALRC, but before these can be widely disseminated it behooves us to evaluate them against the current research that is being done.

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THE EUROPEAN FRAMEWORK OF REFERENCE AND L2 LEARNERS WITH A LOW LEVEL OF EDUCATION

Anne-Mieke Janssen-van Dieten²³

1 The European Framework of Reference

The aim of the Common European Framework of Reference for Languages (CEF) (Council of Europe, 2001) is to achieve more coherence and harmony in the field of languages and comparability of language qualifications within the European Community. The core of the document consists of descriptions of communicative activities and matching descriptions of communicative language competence at six levels. Three types of language users are distinguished: Basic user, Independent user and Proficient user.

The levels A1 (Breakthrough) and A2 (Waystage) are sublevels of the basic level. Within the levels of the Independent and Proficient user, sublevels B1 (Threshold) and B2 (Vantage), C1 (Effective proficiency) and C2 (Mastery) are distinguished. A basic user is someone at an elementary level of competence, but who, in communication situations, is dependent on the willingness of the conversation partner to adapt to his/her level. An independent user is someone who is able to manage in everyday practice, can make himself/herself understood without too much effort and is in general able to understand speech spoken at a normal rate. Proficient users can communicate without any impediments.

Along with the CEF a European Language Portfolio was developed. An official portfolio has to be validated by an international validation commission of the Council of Europe. Finally, in the DIALANG project checklists were developed for all languages within the European Union that enable people to assess their own level in terms of the CEF.

5.1 Concepts Underlying the Model

The framework is based on different existing models for language competence and language use, among which Canale & Swain's (1980) model is arguably the most influential one. North & Schneider (1998: 226) summarize the result as follows:

“... the scheme sees communicative language competence (linguistic, pragmatic, sociolinguistic) as a part of general human competences (including socio-cultural competence). Learners draw on these

²³ Anne-Mieke Janssen was a member of the Department of Linguistics at Radboud University Nijmegen; she retired some years ago.

competences to the extent that they can, given conditions and constraints operating, and adopt in the process strategies appropriate to their purpose in the circumstances in order to complete the specific task in the language activity concerned.”

This definition contains in a nutshell the components that play a role in language use and language learning and that are therefore included in the model of description. We will not discuss all these components in detail. One of them, however, is crucial with regard to learners with a low level of education.

General competences are subdivided into existential competence, declarative competence and ‘skills and know how’. Together these three competences determine the learning capacity and the capacity to be receptive to the other. The second component, declarative knowledge includes socio-cultural knowledge, intercultural awareness and knowledge resulting from experience and of formal education. It is this aspect, formal education, which causes problems. Of course, language learners’ previous knowledge plays an important role and has to be taken into account in language teaching and language testing. It certainly deserves attention in the model. It is not right, however, to subsequently assign such a dominant role to declarative knowledge that it is almost impossible for language learners with a low level of education to show progress in language proficiency up to higher levels. We will elaborate on this topic later.

5.2 *Development of the Framework*

The framework was developed in close cooperation with 292 Swiss foreign language teachers working in secondary education, vocational training and adult education. The project started out with gathering a pool of descriptors, taken from existing scales for the description of levels of language proficiency (North, 1993). Making use of the experience and expertise of the teachers these descriptors were selected, reformulated and categorised. Next the teachers evaluated ten of their pupils using the selected descriptors and two weeks later video recordings (of oral communication in English only) were assessed. The results of the assessments were subjected to statistical calibrations that made it possible to scale the descriptors. That is, to rank them on the six levels of the proficiency scale. Descriptors that did not fit were eliminated. It appeared that teachers found it difficult to scale communicative activities they did not practice in class, like making phone calls or participating in meetings. This means that the framework is not straightforwardly appropriate for second language learners.

1.3 *Structure of the Framework*

In the framework progression can be shown on a horizontal and a vertical dimension. Progression on a horizontal dimension entails extension of the number of types of communicative activities within a certain level. Vertical progression means moving to the next level of proficiency (see appendix). The assumption is that mastery of a certain level implies mastery of all levels below that level.

Different scales were developed for communicative activities in reading, listening, oral interaction, oral production and writing, each of which were subdivided into more

specific scales. For each of these (sub)scales six levels of communicative activities were described, to be used in self-assessment, in the form of ‘can do’ statements.

To assess the quality of production, scales for communicative language competence were developed. They are subdivided into pragmatic and linguistic aspects. Pragmatic aspects include spoken fluency, flexibility, coherence and precision. There is a general linguistic scale, but more specific scales for vocabulary range, vocabulary control, grammatical accuracy, phonological control and orthographic control are available.

In order to show that one has mastered, let’s say, level B1, one has to perform the communicative tasks of that level as well as meet the pragmatic and linguistic demands required at level B1.

2 *The Language Portfolio*

A language portfolio consists, in the CEF setting, of three components: a passport, a biography and a dossier. The language passport serves the purpose of reporting to third parties. It contains two kinds of information; language certificates on which it is indicated which level of the CEF has been reached and self-assessment data. For self-assessment, checklists are used that are based on the CEF. In the language biography, all kinds of language learning experiences, both inside and outside school, can be documented. The biography is an opportunity par excellence for second language learners to show their experience with languages that are generally not taught in school and to show their ability to function in every day life outside school. The dossier is filled by the learner with samples of his own work that demonstrate mastery of certain communicative tasks at the level reported in the passport. The function of the dossier is merely a pedagogic one. It requires making choices, judging whether requirements have been fulfilled and reflection on learning activities. If the dossier is used as a show case, it also has a reporting function.

The advantage of working with a portfolio in education is that it forces teachers to differentiate and to guide individual learners. The owner of the portfolio is the learner himself/herself.

Experiments with the language portfolio in the Netherlands (Stoks, 2001) have shown, among other things, that the language used in the portfolio and the CEF scales was too difficult and too abstract (for instance terms as ‘frequent words’) for young learners and learners with a low level of education.

3 *Problems for Second Language Learners with a Low Level of Education*

The CEF is a rich document, but the fact that it has been developed for foreign languages in a formal educational setting has some drawbacks for second language learners (both inside and outside the classroom) and for learners with a low level of previous education. The fact that certain everyday activities have not been scaled is a minor problem, compared to the fact that a higher level of language proficiency goes hand in hand with a higher level of education and cognitive development. We will try to demonstrate this with respect to listening comprehension. At the lowest level, A1, one can recognize familiar words and very basic phrases, concerning oneself, one’s family and immediate concrete surroundings, when people speak slowly and clearly. Mind: it is

a matter of recognition not of understanding. At the next level, A2, one does understand phrases and the most frequent vocabulary, also related to areas of most immediate personal relevance, but this time extended to the domains of shopping, local geography and employment. Messages are simple and clear. At B1, one can understand the main points of clear standard speech on familiar matters regularly encountered in work, at school, during leisure activities etc. One can also understand the main point of many radio or TV programmes on current affairs or topics of personal or professional interest when the delivery is relatively slow and clear. The first point at which slow speech and clear articulation are not mentioned is at level B2, but at the same time one has to understand extended speech and lectures and follow even complex lines of argument provided the topic is reasonably familiar. Migrants, however, who have to function socially and vocationally do not function in surroundings where speech is slow, clearly articulated and standard. Yet, many of them do understand their colleagues very well and speak fluently, albeit not about chaos theory.

Apparently the compilers of the CEF were aware of this problem. Hence the suggestion that, if vertical progress is no longer possible, horizontal extension still indicates progress. That, however, does not seem to be a fruitful idea, since the model must be interpreted as a conic one, small at the bottom, broad at the top. This means that possibilities of extension to other domains or text types at the lowest levels are sparse, and it also means that qualitative aspects, such as normal rate of speech in listening or fluent production, do not occur at those levels. For educational purposes, lower level communicative activities could be combined with higher level qualitative characteristics and vice versa. This procedure, however, is not applicable in the passport that reports CEF levels.

Another drawback of the fact that scales have been developed for foreign language learners in formal education is that it is assumed that learners can read and write in their native language and that learners share the same native language. Checklists and descriptors to describe communicative activities and their characteristics can be used in the L1. This is not possible in second language classes in which generally a variety of native languages are represented. For second language learners the wording has to be adapted to the learners' levels of language proficiency. Furthermore, for non-literate learners the starting point of the reading and writing scales lies at the end of a route in which it is learned how to read and write in a technical way. How these problems have been addressed in DSL education will be reported on in the contribution by Willemijn Stockmann in this volume.

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Appendix 1: Common Reference Levels: self-assessment grid (source: Council of Europe, 2001).

	A1	A2
Listening	I can recognise familiar words and very basic phrases concerning myself, my family and immediate concrete surroundings when people speak slowly and clearly.	I can understand phrases and the highest frequency vocabulary related to areas of most immediate personal relevance (e.g. very basic personal and family information, shopping, local area, employment). I can catch the main point in short, clear, simple messages and announcements.
Reading	I can understand familiar names, words and very simple sentences, for example on notices and posters or in catalogues.	I can read very short, simple texts. I can find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus and timetables and I can understand short simple personal letters.
Spoken interaction	I can interact in a simple way provided the other person is prepared to repeat or rephrase things at a slower rate of speech and help me formulate what I'm trying to say. I can ask and answer simple questions in areas of immediate need or on very familiar topics.	I can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar topics and activities. I can handle very short social exchanges, even though I can't usually understand enough to keep the conversation going myself.
Spoken production	I can use simple phrases and sentences to describe where I live and people I know.	I can use a series of phrases and sentences to describe in simple terms my family and other people, living conditions, my educational background and my present or most recent job.
Writing	I can write a short, simple postcard, for example sending holiday greetings. I can fill in forms with personal details, for example entering my name, nationality and address on a hotel registration form.	I can write short, simple notes and messages relating to matters in areas of immediate need. I can write a very simple personal letter, for example thanking someone for something.

Common Reference Levels: self-assessment grid (part II)

B1	B2
I can understand the main points of clear standard speech on familiar matters regularly encountered in work, school, leisure, etc. I can understand the main point of many radio or TV programmes on current affairs or topics of personal or professional interest when the delivery is relatively slow and clear.	I can understand extended speech and lectures and follow even complex lines of argument provided the topic is reasonably familiar. I can understand most TV news and understand the majority of films in standard dialect.
I can understand texts that consist mainly of high frequency everyday or job-related language. I can understand the description of events, feelings and wishes in personal letters.	I can read articles and reports concerned with contemporary problems in which the writers adopt particular attitudes or viewpoints. I can understand contemporary literary prose.
I can deal with most situations likely to arise whilst travelling in an area where the language is spoken. I can enter unprepared into conversation on topics that are familiar, of personal interest or pertinent to everyday life (e.g. family, hobbies, work, travel and current events).	I can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible. I can take an active part in discussion in familiar contexts, accounting for and sustaining my views.
I can connect phrases in a simple way in order to describe experiences and events, my dreams, hopes and ambitions. I can briefly give reasons and explanations for opinions and plans. I can narrate a story or relate the plot of a book or film and describe my reactions.	I can present clear, detailed descriptions on a wide range of subjects related to my field of interest. I can explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.
I can write simple connected text on topics which are familiar or of personal interest. I can write personal letters describing experiences and impression.	I can write clear, detailed text on a wide range of subjects related to my interests. I can write an essay or report, passing on information or giving reasons in support of or against a particular point of view. I can write letters highlighting the personal significance of events and experiences.

Common Reference Levels: self-assessment grid (part III)

C1	C2
I can understand extended speech even when it is not clearly structured and when relationships are only implied and not signalled explicitly. I can understand television programmes and films without too much effort.	I have no difficulty in understanding any kind of spoken language, whether live or broadcast, even when delivered at fast native speed, provided I have some time to get familiar with the accent.
I can understand long and complex factual and literary texts, appreciating distinctions of style. I can understand specialised articles and longer technical instructions, even when they do not relate to my field.	I can read with ease virtually all forms of the written language, including abstract, structurally or linguistically complex texts such as manuals, specialised articles and literary words.
I can express myself fluently and spontaneously without much obvious searching for expressions. I can use language flexibly and effectively for social and professional purposes. I can formulate ideas and opinions with precision and relate my contributions skilfully to those of other speakers.	I can take part effortlessly in any conversation or discussion and have a good familiarity with idiomatic expressions and colloquialisms. I can express myself fluently and convey finer shades of meaning precisely. If I do have a problem I can backtrack and restructure around the difficulty so smoothly that other people are hardly aware of it.
I can present clear, detailed descriptions of complex subjects integrating sub-themes, developing particular points and rounding off with an appropriate conclusion.	I can present a clear smoothly flowing description or argument in a style appropriate to the context and with an effective logical structure which helps the recipient to notice and remember significant points.
I can express myself in clear, well-structured text, expressing points of view at some length. I can write about complex subjects in a letter, an essay or report, underlining what I consider to be the salient issues. I can select style appropriate to the reader in mind.	I can write clear, smoothly flowing text in an appropriate style. I can write complex letters, reports or articles which present a case with an effective logical structure which helps the recipient to notice and remember significant points. I can write summaries and reviews of professional or literary works.

PORTFOLIO METHODOLOGY FOR LITERACY LEARNERS: THE DUTCH CASE

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1 Introduction

In 2001 the Common European Framework of Reference for Languages (CEF) was published as the end product of the overall language policy of the Council of Europe. (See Janssen-Van Dieten, this volume.) Members of the European Union (EU) had already started to prepare the introduction of the CEF in specific EU countries and for specific languages.²⁴ In the Netherlands, for example, the Ministry of Education, Culture and Science called for the development of several instruments indispensable to the introduction of a portfolio methodology, such as:

- a model of a European *Language Portfolio* for Dutch as a second language, consisting of a passport, a biography and a dossier.
- a *Framework for Dutch as a Second Language* (DSL) showing the reference levels for Dutch.
- *Checklists*, which provide example situations of the specific language scales and levels of the CEF. They are aimed at helping learners and teachers relate their individual DSL targets and skills to the framework.
- a *Sample Book* with examples of assessment assignments for DSL learners and a guidebook for teachers and other assessors.
- A *Manual* for teachers, instructors and others guiding the introduction of the portfolio methodology.

The project *Towards a Portfolio for Dutch as a Second Language: Framework DSL* (Dalderop, Liemberg & Teunisse 2002) was carried out in 2001-02 in collaboration with a large number of organizations and teachers in centers for adult education all over the country. At the end of 2002 implementation of the Portfolio DSL began.

²⁴ The present members of the European Union are: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, the Netherlands and United Kingdom. Candidate countries are: Bulgaria, Croatia, former Yugoslavia and the Republic of Macedonia, Romania and Turkey.

2 *The bottom of the Framework Dutch as a Second Language*

The Common European Framework is common for a reason. It is aimed at all types of learners, in all member countries, at all different ages and different educational levels. It is self evident that adjustments to specific language users is necessary, not only for language-specific use but also for users of different age groups and different domains such as daily life, education and work. In the Netherlands, a special language passport has been developed for pupils of elementary schools (Aarts & Broeder, 2003). In this way mother tongue skills and competencies of immigrant children takes on more importance than before. In the course of the development of the Dutch version of the Framework (*Raamwerk NT2*) and the portfolio, it became apparent early on that the present framework and the related instruments (portfolio and checklists) were not suitable for adult literacy learners and learners with low levels of education. The amount of written text, the manner of presentation, particularly its high level of abstraction, didn't fit the needs of non-literate and low-schooled learners. It became clear as well that reaching the lowest level of the CEF – level A1 of Basic User (see (1)) – would require quite a long time for most non-literate and low-schooled adult earners.

(1) *Common Reference Levels: global scale - scale of Basic User A1*

The user can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. S/he can introduce her/himself and others and can ask and answer questions about personal details such as where s/he lives, people s/he knows and things s/he has. S/he can interact in a simple way provided the other person talks slowly and clearly and is prepared to help.

Particularly for those slow learners, it is important they can show they are making progress, that they can apply what has been learnt, and that they can gain insight into their own learning processes. The portfolio system provides more possibilities and challenges to enhance learning in context than a standard oral language test does. The same holds for learning how to read and write: it is more stimulating when a learner can show as soon as possible what s/he can read and write - however little in the eyes of an experienced reader - than having to wait until the readings skills of CEF level A1 (see (2)) will have been acquired:

(2) *Common Reference Levels: Reading level A1*

- The learner can understand very short, simple texts a single phrase at a time, picking up familiar names, words and basic phrases and rereading as required.
- Can understand short, simple messages on postcards.
- Can recognize familiar names, words and very basic phrases on simple notices in the most common everyday situations.
- Can get an idea of the content of simpler informational material and short simple descriptions, especially if there is visual support.
- Can follow short, simple written directions (e.g. to go from X to Y).

In short, the process of learning a second language and learning how to read and write for the first time in a second language, or in a new alphabetic script are brought to the fore when progress can be made visible in small steps: more precisely, in the form of a portfolio. Using the checklist in the portfolio also provides the student with insights into what s/he wants to learn, and collecting in a dossier the concrete results of what has been learnt makes him/her aware of the learning process. When in the early stages of the literacy course, learners discover they can use their brand-new knowledge in the world outside the classroom, this has a tremendous influence on their motivation. The dossier clearly has such a function. Positive gains had already been experienced with the portfolio methodology when it was aimed at low-schooled adults in the domain of work. The portfolio methodology fits well, it has turned out, in the overall tendency to formulate targets not in terms of theoretical knowledge (e.g. of a language), but in terms of skills and competencies. Therefore, the Ministry of Education, Culture and Science was recommended to investigate whether the *Framework DSL* could be extended by functional literacy levels below level A1 of the CEF and how the language portfolio could be made more suitable to DSL literacy learners.

3 *Framework Literacy in Dutch as a Second Language*

3.1 *Why a Framework for Literacy Learners?*

If one decides to use the portfolio methodology, this will have important consequences for the curriculum. Textbooks become less important. They will no longer be decisive for the curriculum; rather competencies, skills, objectives and targets the learner himself has selected will take over the structuring role in curriculum development. When this happens, new points of reference will become necessary as well. It is exactly this function a framework for the acquisition of literacy in Dutch as a second language should have. Without such a calibrated scale it is not possible to compare learner performances and assess how far a learner has progressed. Unambiguous level classification increases transparency both for learners and for teachers and curriculum designers. A consequence of a transparent level classification is that it is easier to make a distinction between groups or classes in adult education, and progression from group to group is promoted in a fair and transparent way. A clearly described framework is the basis for curriculum development, for designing appropriate, well-suited course materials and for test/assessment development.

What kind of decisions had to be made in order to create such a framework for literacy acquisition?

3.2 *Designing the Literacy Framework*

The first problem to solve was the question of how technical and functional objectives could be combined. As shown above, opting for a portfolio methodology implies opting for a functional language teaching approach. In the standard version of the language portfolio, only functional targets are formulated. For the literacy portfolio however, it would not be advisable to describe and work out only functional targets since the technical part of learning how to read and write constitutes a major part of the

those targets. If only functional targets were described, one would run the risk that learners would focus too much on functional targets and only learn by rote, for example, their home address and the days of the week without being able to truly read or write them. For the literacy portfolio, it was therefore necessary to develop a framework in which technical and functional skills would be interrelated. This was one of the most difficult parts of the enterprise, as teaching technical reading skills can easily be based on steps involved in learning the alphabetic writing system, the properties of Dutch phonology and its specific orthographic system. Words existing of one syllable are easier to read than multi-syllabic words with consonant clusters, and regularities are easier than exceptions. Functional reading and writing tasks, however, rarely match the requirements of a systematic plan to support learners in making the phoneme-grapheme connection. The solution we found was to distinguish two different types of skills: technical skills (i.e., basic reading or decoding skills) from functional skills (application in daily life).

A second problem faced was how to integrate literacy learning into the levels of the CEF at which a level for literacy learning is lacking. One option was to add a level at the bottom of the framework, an A0 level, a kind of preparatory route before starting to learn a new language. The objection was that this is not in accordance with the curriculum where teaching how to read and write is always linked to the development of oral skills. This was the reason for sketching a new alternative route for low-educated L2 learners of Dutch which was not added to but integrated into the levels of the CEF (Stockmann 2004). This was done by splitting up level A1 into three smaller parts: the levels Alfa A, Alfa B and Alfa C (Alfa is the abbreviation of *alfabetisering* = literally, alphabetization, i.e. teaching how to read and write, or literacy learning). The latter has the same targets as CEF level A1 (see Figure 1). Each of the three literacy levels describes technical as well as functional skills, but the division is based on the (technical) steps in the reading process itself. At level Alfa A the learner has learnt the alphabetic principle and can read short words, but he still spells words. At level Alfa B reading and writing is more efficient because frequently used consonant clusters and morphemes are read as a unit. At level Alfa C reading and writing has been automated except for long and unknown words. At level C reading is no longer a cause of delay.

<i>Common European Framework</i>	<i>Framework Literacy in Dutch</i>
Levels B1 – C2	
Level A2	
Level A1	Alfa C (= A1)
	Alfa B
	Alfa A

Figure 1: Levels of the Common European Framework compared to those of the Framework Literacy in Dutch as a Second Language

As can be seen in Figure 1, the Literacy Framework does not stop at level Alfa B because the acquisition process of reading has not been completed at level Alfa B. From that moment that literacy learners join a class of literates, they run the risk of delay and stagnation. Level Alfa C is therefore necessary. In this way the literacy route is no longer a separate one preceding L2 acquisition, but literacy has become an integrated part of the entire L2 acquisition process. When a literacy learner has reached level Alfa C, the transition to the standard levels of the *Framework Dutch as a Second Language* should go smoothly.

3.3 The Literacy Framework in More Detail

Table 1: Global characterization of the three literacy levels

	Alfa A	Alfa B	Alfa C
Autonomy	Can carry out reading and writing tasks with help and/or with the help of examples.	Can carry out known and trained tasks without any help.	Can carry out new tasks without help, is able to transfer things learnt in another context.
Fluency	Can read and write character by character.	Can spell and write no longer character by character, but by (consonant) clusters.	Can analyze and synthesize in silence; only long, unknown words cause problems. Can recognize words as a unit and can write them as a unit.
Word complexity	Can read and write global words trained, CVC words, words in which two graphemes represent one phoneme	Can read and write the global words trained, all short words, long words if known, all grapheme combinations; words may contain consonant clusters and morphemes.	Can read and write all words except for long and semantically unknown words.
Text properties	Texts are very short and concern familiar subjects. Texts have a clear typeface and line spacing. Capitals and punctuation marks occur in the text but are not relevant for understanding.	Texts are selected with purpose, are short and concern familiar subjects. Texts contain concrete and well-known words. Typeface may vary. Characters written by hand are recognized.	Texts are short and simple and concern familiar subjects. Texts contain high-frequency words and short and simple sentences with visual support. Typeface is clear. Capitals and punctuation marks are used as a source of information.

Before going further into the distinction between technical and functional skills a more elaborate characterization of the three literacy levels is given in Table 1. The three literacy levels are described from different perspectives:

- the perspective of the performance: how well the task should be performed: with or without support (autonomy), character by character or words as a unit (fluency).
- the perspective of the task: how difficult the words are (complexity) and how difficult the text is (text properties).

This global characterization is the basis of the *Literacy Framework* for technical and functional skills.

3.3.1 Technical Skills

The *Literacy Framework for Technical Skills* is divided in three types of mechanics: reading, writing and auditory skills, as shown in Table 2. Each aspect, e.g. speed/fluency for technical reading, is specified in a separate cell (not shown in Table 2) in terms of what a learner is able to do.

Table 2: Overview of the *Literacy Framework for Technical Skills*

	Level Alfa A	Level Alfa B	Level Alfa C
Technical reading		Specification for: graphemes/phonemes, words, sentences, text, speed/fluency, principles of literacy	
Technical writing		Specification for: graphemes/phonemes, words, sentences, text, speed/fluency, principles of literacy	
Auditory skills		Specification for: phonemes, words, sentences and discourse	

The cells concerning ‘principles of literacy’ need to be clarified. Principles of literacy for reading refer to the knowledge that written language is the representation of:

- spoken language,
- the relationship between image and information,
- different text types.

One of the cells at level Alfa B for reading, for instance, is shown in Table 3.

Table 3: Example of a cell for technical reading skills in the Literacy Framework

Technical reading skills / Level Alfa B	
Principles of literacy	<ul style="list-style-type: none"> - knows what frequent logos refer to. - knows where a text comes from. - knows that, e.g. on signs, words and pictures together may provide information. - starts, after a first orientation, with decoding instead of with guessing in order to understand the text further. - knows that the context may indicate that digits refer to money, dates and telephone numbers. - knows that a word is the representation of a combination of phonemes.

In Table 4 another example of two cells is given for technical auditory skills at level Alfa A. These illustrations are provided specifically to demonstrate the difference between the technical skills and the functional skills, which will be discussed in the next section.

Table 4: Example of two cells for technical auditory skills in the Literacy Framework

Technical auditory skills / Level Alfa A	
Sentences	<ul style="list-style-type: none"> - can isolate words in a short sentence. - can count the number of words in a short sentence.
Conversations	<ul style="list-style-type: none"> - can distinguish difference in intonation when, for example, questions or warnings are involved in a conversation.

3.3.2 Functional skills

The *Literacy Framework for Functional Skills* focuses on reaching not only level A1 of the standard *Framework DSL*, but also the three literacy levels Alfa A, B and C. The corresponding technical skills constitute the basis of the functional skills at a specific level. In some rare cases, however, daily life doesn't respect these technical levels, for instance, when a learner has a complicated address that is too long to memorize (an objective at functional level B). In such cases it is better for the learner to bring a card and copy the address.

The framework for functional skills has a similar division in descriptors and sub-skills as the standard CEF. In Table 5, the sub-skills are given for reading and writing.

Table 5: *Sub-skills for functional reading and writing in the Literacy Framework*

Functional reading skills	Example
Reading correspondence	Letter from school
Reading for orientation	Find the opening hours of an office
Reading for information and argument	Newspaper
Reading instructions	Manual, price label
Functional writing skills	
Writing correspondence	Filling out a form
Writing notes, messages, forms	Informal message, memo
Free writing	Short poem

For each sub-skill a couple of descriptors are provided in the checklists together with examples of how and when these skills can be used. Those checklists show concrete situations and constitute adequate means for usage in the classroom. The examples for level Alfa A are of a more general character, but for the levels Alfa B and C the examples are related to three learner perspectives: participation in society, participation in the labor market and participation in the education of one's children. Obviously, it is possible to provide new examples relevant to a specific student. The specific way the descriptors are adapted to be used by low-schooled learners will be shown in the next section.

4 *The Portfolio for Literacy Students*

As said before, literacy students seem to make little progress when their performance is measured by existing standardized tests. Therefore it is important that other means be used that can show they do make progress, to themselves as well as to others. The portfolio has this double function: a pedagogic-didactic function and a reporting function.

By working on their portfolio adult learners gain more insight in what they are learning and in what they want to learn. Their objectives become clear and that makes them less dependent on the education they receive. Working on the portfolio invites the involvement of the outside world into education, or into what they learn. Acquisition of literacy, just like the entire second language acquisition process, is focused on applicability in daily life.

The reporting function of the portfolio becomes manifest in the dossier, in which learners collect evidence in the form of samples of their work which show what they can do and what they have learnt. It may be a form filled out by the learner her/himself or a postcard written by her/him. It may be also a statement by an interlocutor, or a statement by the schoolteacher of her/his children. It may be a report about the learner's mechanical skills or judgments of a communication assessment that are included in the dossier. This evidence can be shown to an employer (the showcase function of the portfolio). This collection of work can also be used for the assessment function of the portfolio: has a learner collected enough samples of their work that level B for reading has been reached?

Previous experiences with a portfolio for career orientation and planning have shown that a portfolio can only be successful for low-educated learners if it is entirely

tailored to the user. For that purpose the biography, the checklist and the dossier have also been adapted to the low- and unschooled learner.

4.1 *The Biography*

The biography is a difficult but essential part of the portfolio methodology. It consists of the following parts:

- Personal facts
- What have you learnt?
- What is your strong point?
- What language(s) do you speak?
- To whom do you speak Dutch?

Although the biography is very simple, it gives the learner the opportunity to become aware of what s/he is able to do and what s/he still wants to learn. This has two effects: the learner gets a better feeling that s/he is responsible her/himself and for her/his learning process and that s/he can learn independently of what is in the textbook or taught in the classroom. The second effect is that learners discover that for many years they have been functioning in social life in spite of their low level of reading and writing skills. This discovery has the effect of empowerment. Parts of the biography can be filled up regularly. It is up to the learner her/himself to indicate when the moment is there. However, the guidance of the teacher is indispensable here.

The biography can function as an introduction, a kind of visiting card, in the showcase portfolio. The biography provides in short who the portfolio holder is.

4.2 *The Checklist*

The checklist is an important part of the portfolio. The description of the various skills in the checklist is the translation of the *Framework Functional Skills* at level of the learner. The checklist provides examples of speech acts and skills, ordered in the three levels Alfa A, B and C. As a description in words is often too difficult to grasp for literacy learners when they are asked to assess the following skill: *I can read the instruction on my medication*, many learners will say that they cannot, or only with difficulty, but if they see the same skill illustrated as in Figure 2, their reaction will more often be: *I can. It is easy for me.*

I can read how many times a day I have to take my medication.



Tablet 10 mg

1 tablet a day

It is easy for me		It is difficult for me		I cannot do it yet		I want to learn it	
-------------------	---	------------------------	---	--------------------	--	--------------------	---

Figure 2: Example of level Alfa A for reading skills in the checklist.

In the portfolio revised for literacy learners all examples in the checklist for all types of skills have been tailored to suit users with a low level of schooling. Figure 2 showed an example for reading skills; Figure 3 shows an example of writing skills at level Alfa C, in the domain of work.



**A colleague is getting married.
I can write a postcard to congratulate her.**

Hartelijk Gefeliciteerd

It is easy for me		It is difficult for me		I cannot do it yet		I want to learn it	
-------------------	---	------------------------	---	--------------------	--	--------------------	---

Figure 3: Example of level Alfa C for writing skills (domain labor) in the checklist.

With help of the checklist the teacher can show what skills are expected at a specific level. In addition, by means of the checklist, learners develop their capacity of self assessment. They guess what speech acts and skills they think they have mastered and which skills they have not. They also learn to indicate what is important for them to learn. The next step is that teacher and student determine what the next target will be. In the beginning, teachers are worried about the idea that learners underestimate or overestimate themselves. That is not a real problem. If a learner overestimates her/himself, the teacher may propose to look for a sample of that specific skill. When the evidence cannot be found, the learner has to revise her/his opinion. In this way

students learn how to deal with self-assessment and to be more realistic.

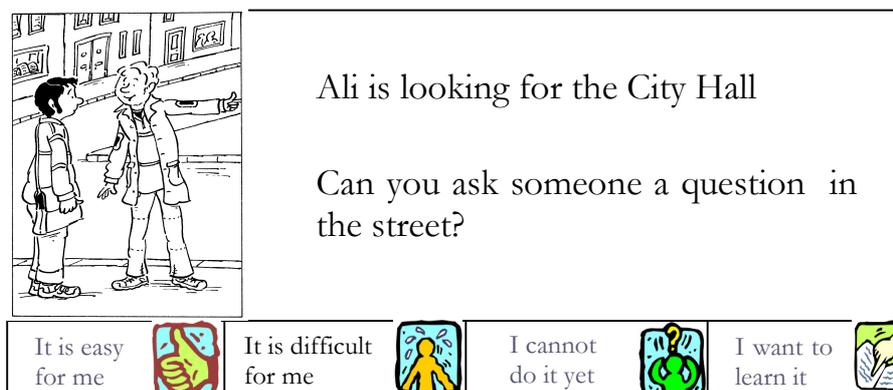


Figure 4: Example of level Alfa C for Spoken Interaction (domain: social participation)

Although literacy classes focus on reading and writing skills, auditory skills play an important role. So, it was obvious that assessment of auditory skills - in particular the skill *spoken interaction* - should be carried out in the same way. After lengthy consideration it was determined to add not only pictures, but also a CD to the checklist so that it would be possible to listen to a learner's conversation and assess whether one is able to conduct such a conversation. Pictures illustrate the context of the conversation and help the learner to guess whether s/he is able to do the same. At a more advanced level (Alfa C / A1) the conversations are written down. An example of the part *having conversations* is given in Figure 4,

5 Assessment

So far the *Framework (Literacy) DSL* and the *Portfolio (Literacy) DSL* do not have formal status in the Netherlands. Legislation and regulation require other instruments such as the National Exams DSL or the Profile Test (*Profieltoets*) at the end of the Dutch citizenship course, obligatory for newcomers from outside the European Union.²⁵ Yet, it is important to add an element of closure to the dossier by an assessment on the basis of the guidelines and the calibration points provided by the *Framework Literacy in DSL*. In the dossier, the learner proves that s/he has mastered a skill. This has obvious advantages compared to more standardized instruments of assessment (i.e., official tests), as this evidence relies on authentic acts in real language use situations. The fact that the samples of work have been collected over time shows that it is not just by chance that the learner has succeeded. The fact that the learner is able to apply her/his knowledge in daily life, supports its validity. Yet, the question remains how the various samples collected by the learner can be weighed. In the manual to the portfolio two

²⁵ At the moment of writing, both the course and the test is obligatory for newcomers outside the EU. New legislation, however, is expected.

ways of assessment are proposed: (i) assessment by means of the evidence guide and (ii) assessment by means of protocol portfolio scoring.

An evidence guide provides guidelines for the assessment of a collection of pieces of evidence. Those guidelines have the status of proposals, not of formal guidelines. Starting-points are the following:

- the assessment occurs for each cell of the *Framework Functional Skills*, writing Alfa A or reading Alfa C.
- for each cell five different pieces of evidence are required.
- the pieces of evidence are relevant, authentic (made by the learner himself), up to date (not older than one year), and reliable.
- the pieces of evidence are distributed over all sub-skills. When the conclusion is that the learner has reached Writing Level A, this judgment is based on those related to the sub-skills: correspondence, notes, messages and forms.

No pieces of evidence are collected for the technical skills for reading and writing. Development of the technical skills is simply reported in a form meant for diagnostic purposes.

The second way of assessment has been developed by the Citogroep (Straetmans, 2004) because of increasing interest in portfolio- and competency-directed education. In this way competencies and linguistic skills can be assessed in the same way. The procedure is as follows: for each cell of the *Framework* a matrix is set up. On the horizontal axis the assessment criteria are summed up, on the vertical axis the assessment tasks. For each task it is indicated what aspects of assessment may be possible. The advantage of this procedure is that it results in a good overview of the tasks and the extent to which they represent the skill and the level required. The requirements are:

- at least five different tasks are presented;
- each aspect is assessed at least once.

5 Conclusion

Initial experiences with the *Portfolio Literacy in Dutch as a Second Language* are promising, based on observations of teachers in adult education centers. Literacy learners can work much more independently and take more responsibility than teachers have ever thought. Learners see the benefit of what they learn. For teachers it is not the easiest way of working with a group of adults. They feel obliged to carry out far-reaching differentiation in the classroom, since an individual selection of objectives chosen from the checklist determines the curriculum of each individual learner. This implies another way of thinking and working, and a lot of book keeping for the teacher, but teachers who get used to this methodology do not seriously complain.

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