

A READING COMPONENTS ASSESSMENT OF ENGLISH LANGUAGE LITERACY LEARNERS IN U.S. PRISONS

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1 Introduction

The United States is the world leader in incarceration. In 2004, over seven million adults were involved in the criminal justice system (BJS, 2006). A growing proportion of the U.S. prisoner population is comprised of non-citizens. In the Federal Prison System (FPS), 25 percent of adults entering the system are non-citizens (U.S. Sentencing Commission, 2000), most of whom are English language learners. Despite the high level of print literacy needs among this population, few studies have examined their literacy learning needs within an English-based adult basic education context.

This paper reports findings from a study of federal prisoners that included both native English speakers and English language learners who were enrolled in English-based literacy programs (Muth, 2004). Reading component skills of both groups of learners were assessed. This paper examines and compares the reading patterns that emerged and discusses implications for assessment protocols in prison classrooms. The aim of the study is to advance our understanding of reading assessment as it relates to the instructional needs of English language learners.

2 Some Context: Non-citizens in U.S. prisons

Although the focus of this paper is on *English language literacy learners (ELLs)* – i.e., learners whose first language is not English, enrolled in literacy programs – data about English language learners in federal prisons were limited. Thus data about *non-citizens* – i.e., citizens of countries other than the U.S. – were sometimes used as proxy, as the great majority of these non-citizens were also English language learners (U.S. Bureau of Prisons, 2004). The author realizes that the match between non-citizens and English language learners is not exact. Readers should consider this when thinking about the contextual information in this section.

2.1 Rates of Incarceration Among Latino/a Populations

As of June 30, 2006, state and federal prisons in the U.S. held 88,776 non-citizens, a 1 percent increase from the 87,917 held a year earlier. Sixty-two percent were held in state prisons and 38 percent in federal institutions (BJS, 2006). Latinos/as make up the largest group of incarcerated non-

citizens. In nine states, 4-8 percent of adult Latino men are incarcerated. Further, in ten states, Latino men are incarcerated at rates between five and nine times greater than those of white men; in eight states, Latina women are incarcerated at rates that are between four and seven times greater than those of white women.

2.2 *Sentence Lengths and Educational Levels of Incarcerated Non-citizens*

In a three year study that controlled for crime, sex, race, SES and citizenship, Mustard (2001) found that, as a group, citizens received shorter federal sentences than non-citizens. He speculates that this may be due, at least in part, to citizens' greater knowledge of the U.S. criminal justice and legal support systems. In addition to these "social capital" factors (Rose & Clear, 2002), lower literacy levels may also contribute to lengthier sentences among non-citizens. Clark and Anderson (2000) noted that sentenced illegal aliens (a term used to describe deportable non-citizens) tended to be poorer, less educated, younger, more likely to be Hispanic, more likely to be male, and less likely to have dependents. As a group, non-citizens entering the FPS appeared to be considerably less educated than citizens. In 2000, over 18,000 citizens entered the FPS; approximately 68 percent had a High School Diploma or a General Equivalency Diploma (GED), the credential that is widely accepted in the U.S. as its equivalent. By comparison, approximately 4,500 non-citizens entered the FPS that year, and only 28 percent had completed a secondary education (U.S. Sentencing Commission, 2000).

2.3 *FPS Education Programs*

The Federal Prison System offers a Spanish-based GED program, and in 2004 12 percent of all GEDs awarded to federal prisoners were in Spanish (752 Spanish GEDs vs. 5,372 English GEDs). But most ELLs are enrolled in English-based programs – often after completing, or concurrently enrolling in, an English as a Second Language (ESL) program. At any given point in 2004, over 25,000 incarcerated learners were enrolled in FPS English-based literacy programs. Approximately 17 percent (over 4,500) of these learners were non-citizens, and most of them were English-language learners (U.S. Bureau of Prisons, 2004).

Despite this large presence of ELLs, very little is known about how this group of low-literacy learners processes English text or how their instructional needs differ from those of low-literacy learners whose first language was English. In an effort to better understand these needs, an assessment protocol – modeled after Strucker and Davidson's (2003) Adult Reading Components Study – was adapted for use with federal prisoners.

3 Adult Reading Components Study

In an attempt to get below the surface of over-simplified reading assessments (such as the widespread use of silent reading comprehension tests to diagnose and place adult literacy learners with diverse life and learning experiences), Strucker and Davidson (2003) administered a battery of reading component tests to 955 randomly selected learners (676 ABE and 279 ESOL) from community-based learning centers in Texas, Tennessee, New York, Rhode Island, Connecticut, Massachusetts, and New Hampshire.

3.1 Reading Components

Although reading comprehension is widely considered to be the outcome of reading instruction, Strucker (1997) argued that effective reading instruction must be based on an understanding of the component skills that culminate in comprehension. These components can be organized into two primary groups – print and meaning – and fluency (Table 1). *Print skills* include such skills as phonemic awareness (proficiency in hearing small units of sound) and word recognition (including sight word recognition and decoding). *Meaning skills* include oral vocabulary (receptive and expressive), background knowledge (prior learning), and reading comprehension¹. *Fluency* goes beyond the automatic recognition of words in print to include the use of intonation, inflection, rhythm, and other prosodic features of speech. In the ARCS study (as in the current study), a simple measure of reading rate (words per minute) was used.

Strucker and Davidson's (2003) work in reading components is an extension of the work of Bruck (1990, 1992), Chall (1991), Curtis (1980, 1987), Read (1987), Read and Ruyter (1985), and others. Based on her work at the Harvard Adult Literacy Initiative Laboratory, Chall (1991) hypothesized that most adult literacy learners would not possess equal abilities across reading component tests but rather achieve one of two uneven patterns (or profiles): (a) a pattern of stronger meaning scores (e.g., vocabulary) and weaker print scores (e.g., word recognition) like some children and adolescents that were diagnosed with learning disabilities; or (b) a pattern of strong print skills relative to meaning,

¹ The term reading comprehension sometimes refers to broad reading outcomes, like the outcomes that silent reading comprehension tests purport to measure. In this use, reading comprehension may be seen as the culmination of print and meaning skills (Hoover & Gough, 1990). But the term also refers to a specific *meaning component* of reading—i.e, the comprehension strategies and skills (e.g., predicting, scanning for information, text look-backs) that one uses to set purposes for reading, monitor understanding, and reflect critically.

similar to the pattern often achieved by second language learners in ESL programs that were schooled in their first language.

To a large degree, Strucker and Davidson's (2003) Adult Reading Components Study (ARCS) confirmed Chall's hypothesis, at least for those learners who participated in community-based programs. They carefully documented both even and uneven profiles among the learners in their study. (A free, interactive, on-line course describes their findings. It is available at: <http://www.nifl.gov/readingprofiles/>)

Table 1: Reading Components Organized by Print/Meaning

Category	Component
	Print
	Phonemic Awareness
	Word Recognition
	Sight Words
	Decoding (Word Analysis)
	Spelling
	Meaning
	Word Meaning (Oral Vocabulary)
	Background Knowledge
	Reading Comprehension Skills and Strategies
	Fluency
	Reading Rate

3.2 *Instructional Importance of Component-level Assessment*

Strucker (1997) noted that many adult literacy programs use a single silent reading comprehension score from a group-administered test to assess reading and place adult learners. Although these silent tests provide one way to measure reading outcomes, they fail to provide the diagnostic information needed to inform instruction. He warned that the high prevalence of uneven reading component profiles among adult learners makes this over-simplistic approach ineffective and could lead to inappropriate (and sometimes even harmful) instructional approaches.

For example, researchers have argued that explicit phonics programs are both over-used (Moll, 1998) and under-used (Adams, 1990). The key to appropriate reading instruction appears to begin with adequate assessment at the component level. Literacy instruction needs to emphasize print skills and meaning skills in differing proportions

depending on the levels and profiles of the learners (McShane, 2005; Curtis & Longo, 1999).

Efforts to translate reading component assessment models to instructional models have increased in the past five years (Kruidenier, 2002; McShane, 2005). But the application of reading component assessment to adult ELLs – particularly those who are incarcerated – remains almost non-existent at this time (National Center for ESL Literacy Education, 2003; Strucker, 2002). The current study of federal prisoners aims to address this gap. An overview of its methods follows.

4 Method

One hundred and twenty literacy learners from seven federal prisons in the U.S. participated in the study. Prisoners from one minimum-security female prison and two low, medium, and high security male facilities were administered an educational history questionnaire and a battery of 10 reading components tests. Cluster analyses were used to determine reading patterns and the extent to which these patterns conformed to earlier predictions (Chall, 1991) and studies of community-based adult literacy learners (Strucker & Davidson, 2003).

4.1 Sample

Detailed descriptions of assessment tools, sampling strategy, and validity controls are explained in detail elsewhere (Muth, 2004). Latino/a inmates – many of whom were enrolled in Spanish literacy programs at the time of this study – were under-represented. However, 29 percent of the participants ($n = 35$) were ELLs, a sufficient number to observe some limited patterns among the group. (This number includes nine inmates from Jamaica and Guyana who identified Patois or Creole as their first language and English as their second language.) Table 2 provides demographic data about the sample.

4.2 Instruments

The following tests were used to derive eleven measures used in the cluster analysis: *The Diagnostic Assessment of Reading* (DAR) (Roswell & Chall, 1992) was used to obtain four measures used in the cluster analysis: word recognition, oral reading, and word meaning. The DAR Word Recognition Test consists of graded lists of phonetically regular and irregular words. The DAR Oral Reading Test assesses word recognition (in context) and fluency, but not comprehension. The DAR Word Meaning Test measures oral, expressive vocabulary. To obtain a measure of reading rate, the participants were asked to reread one of the two

Table 2: *Selected Demographics of 120 Inmate Sample.*

Demographic		Number	Percent
Sex			
	Male	105	87.5
	Female	15	12.5
Security Level			
	Minimum (female)	15	12.5
	Low	30	25
	Medium	40	33.3
	High	35	29.2
Race/Ethnicity			
	African American	85	70.8
	Caucasian (non-Hispanic)	20	16.7
	Hispanic/Latino/a	9	7.5
	Asian/Pacific Islander	4	3.3
	Native American	1	.8
	Mixed Race	1	.8
Native Language			
	English	85	70.8
	Patois/Creole (Jamaica, Guyana)	9	7.5
	Spanish	6	5
	Creole (Haiti, Bahamas)	6	5
	Arabic	5	4.2
	Other (Chinese, Swahili, Albanian, Mandingo, Vietnamese, Pushtu)	9	7.5

highest passages from the DAR Oral Reading Test for which mastery was obtained. The *Rosner Test of Auditory Analysis Skills* (Rosner, 1975) is print-free. It was used to provide a measure of phonemic awareness; i.e., how well one can discern and manipulate sounds at increasingly subtle levels. The tasks progress in difficulty from the deletion of whole words (e.g., “say the word /cowboy/ without the /boy/”) to blended phoneme-level deletions of a single consonant (e.g., “say /play/ without the /p/”). The *Woodcock-Johnson Psycho-Educational Battery of Achievement Tests-III, Word Attack Test*, (Woodcock, McGrew, & Mather, 2001) was used to measure decoding. This test requires participants to read a list of increasingly difficult, phonetically regular pseudowords. *Rapid automatized naming* (RAN) test for letters, adapted from Denckla and Ruddel (1974), was used to measure naming speed – an indicator of general processing speed that is associated with reading rate. Participants were asked to continuously

read, as quickly and accurately as possible, a page containing 50 items from an array of letters or numbers. *The Peabody Picture Vocabulary Test* (PPVT) (Dunn & Dunn, 1997) was used to measure receptive vocabulary. The test required the participants to listen to a verbal cue (“which picture tells best about ___”) and then point to one of four pictures that best illustrated the word’s meaning. The *Wechsler Adult Intelligence Scales (WAIS): Digit Span* (Wechsler, 1997) was used to measure how well subjects remembered a series of digits presented orally. WAIS Digits Forward, a measure of short-term memory, required participants to repeat digits in the same order as presented. WAIS Digits Backward, a measure of short term and working memory required learners to repeat digits in reverse order. *The Adult Basic Learning Examination* (ABLE), Reading Comprehension, a group-administered test, required participants to silently read passages of increasing difficulty and answer multiple-choice comprehension questions about the passages (Karlsen & Gardner, 1986).

An *educational history questionnaire*, adapted from Strucker and Davidson’s (2003) instrument, was also administered. It had 64 items that addressed six general areas: general information (e.g., age, need for glasses, native language); employment/vocational history (e.g., most recent job before incarceration, how long on that job); family history (e.g., marital status, language spoken in home); school history (e.g., highest grade completed, need for special help with reading); current reading and writing practices (e.g., educational goals, reading interests); and medical and health history (e.g., medical conditions effecting ability to learn, history of drug abuse prior to incarceration).

4.3 Factor Analysis

Factor analysis can be used to determine how individual tests are related. In this study, the factor analysis aligned the test measures with one of four broad areas: *print skills* – phonemic awareness, word attack, word recognition and oral reading; *meaning skills*—oral expressive and receptive vocabulary; *reading rate* – rapid automatized naming and reading rate; and *memory* – verbal short-term and working memory. The four factors provided a helpful framework for organizing and describing reading patterns and clusters (see below and Figure 1).

4.4 Cluster Analysis

Cluster analysis is used to examine patterns in data sets when multiple variables are studied simultaneously (Lorr, 1983). This study employed iterative statistical processes that resulted in the hierarchical building of

clusters.² At the beginning, each of the 120 participants (or cases) was viewed as a separate cluster. Using a hierarchical algorithm, Wards Method, each case was combined with its closest neighbor – the case with the most closely matched reading pattern. At each iteration, mathematical measures of homogeneity were calculated. As each new member was added to a cluster, its diversity expanded and, conversely, its homogeneity lessened.

Two types of data were used to monitor the cluster-building process. The first was the statistical data noted above. The second was the educational history questionnaire data. At each iteration, new clusters were evaluated mathematically (in terms of homogeneity) and qualitatively (in terms of face value based on questionnaire data such as native language, highest grade completed, and history of special education). The analysis determined that eight clusters was optimal. Solutions with fewer clusters created groups that lacked homogeneity and face validity. Solutions with greater numbers of clusters created smaller and more homogenous groups, but some clusters were almost indistinguishable from others and created unnecessary redundancies. For an extensive description of the procedures and validity controls used in this study, see Muth (2004).

The eight profiles (Figure 1) are primarily distinguished by their aggregate *print* and *meaning* factor scores, but performances in areas of *reading rate* and *memory* also influenced the way the way participants were assigned to clusters. These findings, and their significance, are explained next.

5 Findings

The cluster analysis assigned 120 literacy learners to eight clusters (Figure 1). In addition to the relationship between print and meaning factors, which is the prevailing characteristic used to label the clusters, two other factors – reading rate and memory – had secondary importance in defining clusters. In Figure 1, the four factors represented along the X-axis are, from left to right: Print, Meaning, Reading Rate, and Memory. The Y-axis represents the clusters' aggregate Z-score values – i.e., the distance from the mean, in terms of standard deviations, for the entire 120 prisoner sample.

5.1 *Print-versus-meaning Profiles*

A close look at the eight profiles in Figure 1 reveals three patterns based on the clusters' aggregate print and meaning scores. For example, Cluster

² All calculations were done with SPSS (2000) software.

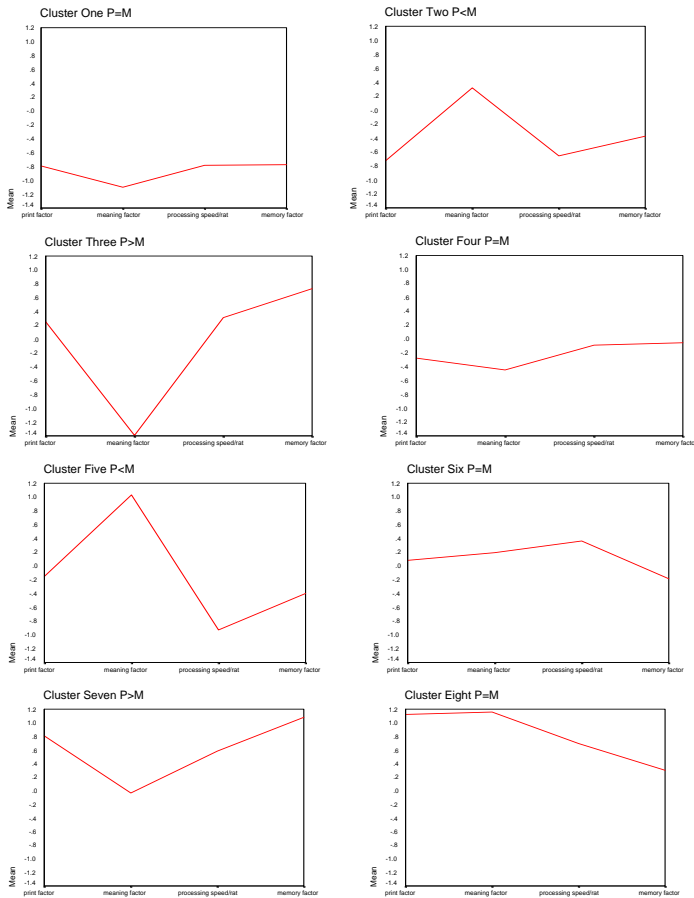


Figure 1: Profiles of Eight Clusters.

1 participants tended to have equally low scores across tests of print and meaning, and therefore represents a Print=Meaning (P=M) profile. Clusters 4, 6, and 8 also present P=M profiles at increasingly higher levels of proficiency. For example, Clusters 4 and 6 are both relatively flat, but, with the exception of the memory factor score, cluster 6 members, on average, achieved Z-scores as much as .5 standard deviations higher than cluster 4 members.

By way of contrast, the remaining clusters all represent literacy learners that have not developed reading proficiencies evenly across the component areas. Clusters 2 and 5 have pronounced Print<Meaning

(P<M) profiles while Clusters 3 and 7 demonstrate the opposite Print>Meaning (P>M) pattern.

5.2 *Confirming Chall's Hypothesis*

As noted above, Chall (1991) predicted two types of uneven profiles among adult literacy learners, based on the high prevalence of ELLs and adults with reading disabilities that participated in the Harvard Adult Literacy Initiative. The P>M profile suggested an ELLL – particularly one that was literate in L1, and particularly when that L1 employed a writing system with a phonologically-based alphabet. Conversely, the P<M profile suggested an adult with a reading disability (dyslexia) – particularly when that adult struggled with print skills despite five or more years of formal education.

To some degree, the Federal Prison Study confirmed Chall's hypothesis, in that numerous uneven profiles were found (Figure 1). As a group, ELLs achieved lower scores on all reading component tests. And, as Chall predicted, ELLs tended to perform better on print tests (especially word recognition and oral reading) than on meaning tests (word meaning) (see Figure 2).

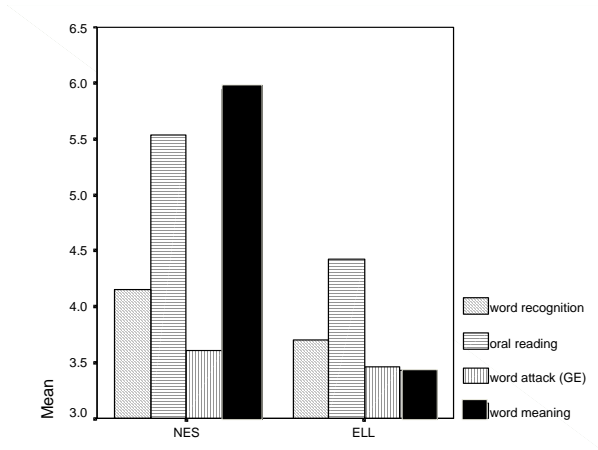


Figure 2: *Reading Patterns of Native English Speakers and English Language Literacy Learners Based on Aggregate Grade Equivalent Scores.*

Further, many ELLs did cluster together in P>M groups. For example, cluster 3 was comprised of six learners. Five of the six were ELLs. These ELLs may have been similar to the ELLs that Chall worked with at Harvard (J. Strucker, personal communication, October 30, 2006). They

all received eight or more years of formal education in L₁, and did not begin speaking English until age 12 or later. (Table 3.)

Table 3: Members of Cluster Three – A Print > Meaning Cluster

Case ID	Native Language	Age Speak English Completed	High Grade	Word Recog GE	Oral Reading GE	Word Meaning GE
7	Chinese	28	12	2.0	1.5	.0
76	Arabic	12	14	4.0	4.0	2.0
77	Arabic	20	8	4.0	5.0	1.0
81	Pushtu	51	10	4.0	5.0	4.0
82	Chinese	16	8	3.0	5.0	2.0
118	English	-	6	5.0	5.0	4.0
Mean		25.4	9.6	3.6	4.3	2.2

Notes. *Word Recognition and Oral Reading = print skills.*

Word Meaning = meaning skill.

GE = grade equivalent.

5.3 Qualifying Chall's Hypothesis

Despite this aggregate conformity to Chall's hypothesis, many individual ELLs did not achieve P>M profiles. In fact, only 18 of 35 ELLs were assigned to P>M clusters. A closer examination of those ELLs that were and were not assigned to P>M clusters revealed the following: (a) Those ELLs that conformed to Chall's hypothesis (assigned to P>M clusters) tended to have more formal education in L1 (eight or more years); they also tended to be more literate in L1 than in English and preferred speaking in L1. Interestingly, these ELLs also reported having fewer serious head injuries, drug addictions, and other health problems.³ (b) Conversely, those ELLs that were not placed in P>M groups typically learned to speak English at a younger age (eleven or earlier) and preferred speaking in English rather than in L1. (See Table 4.)

In the next section, the implications of these findings for instruction and for the design of assessment protocols for ELLs are discussed.

³ Especially health problems associated with learning difficulties and reading disabilities, such as head trauma, lead poisoning, depression, substance abuse, and attention deficit disorders (Muth, 2004).

Table 4: *ELLs Who Were and Were Not Placed in P>M Groups*

Learning and Health Issue	Placed In P>M Groups n=18	Not Placed in P>M Groups n=17
Average age learned English	21 yrs	11 yrs
Highest grade completed	8th	5 th
Writes in L1	83 %	37 %
L1 is stronger than English	76 %	31 %
Had trouble with reading in school	25 %	54 %
Had serious head injury in past	22 %	35 %
Had past problem with substance abuse	6 %	59 %

6 *Implications*

As noted in section 3.2 above, component-level assessments are needed to guide literacy instruction. When silent reading comprehension test scores alone are used, certain reading components – in print or meaning areas – may be unwittingly overemphasized while areas of critical need are overlooked (Strucker, 1997). Components assessments help create instructionally-relevant frameworks among highly diverse populations of literacy learners. Such diversity is found in most prison classrooms where ELLs and native English speakers sit side-by-side and where many learners report extensive health problems. Although as a group ELLs in the study reported fewer health and learning problems than their native English-speaking counterparts, health problems among ELLs were nevertheless reported with considerable regularity. In fact, of those ELLs that were not assigned to P>M groups, 59 percent had histories of substance abuse, 35 percent had experienced severe head injuries, and 54 percent reported struggling academically as children (Table 4).

Results from this study suggest that we cannot assume ELLs in prison-based literacy programs have stronger print skills than vocabulary skills or that they lack reading disabilities or health problems that impede their ability to master print skills. In short, their cognitive, social and linguistic needs are complex.

6.1 Toward a Components-level Assessment Protocol for Adult ELLs in Prison

Since Fitzgerald's (1995) call for component-level assessments for ELLs, some progress has been made. Strucker (2002) provided an analysis of ARCS data for ELLs in community-based adult literacy programs. The Center for Applied Linguistics (2007) is currently developing an assessment battery for elementary-age ELLs that includes measures of print, meaning and fluency. But very little is known about the utility of reading component assessments for incarcerated adults with low proficiency in literacy and English language.

Correctional educators, like their adult literacy counterparts in the community, struggle continuously with instructional decisions: Would this student benefit from an intensive phonics program? How much time should I spend teaching vocabulary? When is the best time to address fluency? What role should L1 play in literacy learning? If Strucker's (1997) assertion is true – that instructional decisions must be based on more than silent reading comprehension scores alone – then the need to design and study a protocol for assessing adult ELLs is great.

The findings presented in this paper are limited by, among other things, the small sample size. Nevertheless, these preliminary findings do seem to corroborate the assessment protocol developed for the ARCS study (Strucker & Davidson, 2003), although modifications for use among incarcerated learners will be warranted. Here are some considerations for those interested in adapting the ARCS protocol for prison-based use.

6.1.1 Reading Component Assessments

Prison educators can be doubly challenged with limited resources and cultures that create borders between teachers and students (Wight, 2006). Formal individualized assessments are often beyond the reach of even the most determined teacher, so that even modest assessment strategies must be introduced carefully. Given these practicalities, a comprehensive assessment of all component areas is not warranted. (Davidson and Bruce, 2003, have identified an assessment protocol using only five assessments.) Any reading components assessment model would be incomplete, however, if it did not provide a comparison of print and meaning skill proficiency. Thus, a common metric (e.g., grade equivalence) is needed to compare scores across the print and meaning-related tests. Davidson and Bruce have created a reference tool for locating component level tests. It can be found at: http://www.nifl.gov/readingprofiles/MC_Test_Bank.htm.

6.1.2 Educational Histories

Knowledge of incarcerated learners' educational histories is also an essential part of the assessment protocol. Without this knowledge, the usefulness of the reading component assessment data will be limited. The author (Muth, 2004) developed an educational history questionnaire for use with incarcerated ELLs based on one used in ARCS. The prison-based questionnaire included additional questions that were health and release-related, but less extensive surveys may be more practical for day-to-day prison use. An effective educational history questionnaire should, at the very least, provide information about the learner's (a) first language (is its written form based on a phonological alphabetic?); (b) highest grade completed (did the learner struggle in school? if so, in which subjects? what language[s] were spoken in school?); (c) age when (s)he first began learning English; (d) language taught at school (if not L1); and (e) preferred language for speaking, reading, writing. Reading assessments in L1 are invaluable resources, though rarely available to prison educators.

The learners' histories are used, in part, to corroborate or challenge reading components test data. For example, we would not be surprised to find that an ELL with a strong P>M profile enjoyed school as a child, studied successfully in Mexico until completing an secondary education, and learned English later in life. We might hypothesize that this learner could draw on a rich range of academic background knowledge to build knowledge of English vocabulary; we might also expect this ELL to have a strong set of print skills in L1 upon which to build knowledge of English orthography.

However, if that learner reported *struggling* through 10 years of schooling and achieved lower scores on print tests relative to meaning (P<M profile), we might form a different set of questions: When did (s)he begin to learn English? Does this ELL have a reading and/or language disability? Are there any health issues that might bear on learning and retention? How can we help this learner take advantage of English vocabulary strengths while supporting the need to improve decoding and sight word recognition?

Educational history data is needed to help explain, challenge and extend reading components test data. Additional assessment strategies – such as access to reading records in L1, expressive language assessments and qualitative interviews – are also warranted, but go beyond the scope of this paper.

7 Conclusion

This study presented findings about the reading patterns of ELLs in prison-based literacy programs. Based on both conforming and non-

conforming patterns among the ELLL group, consideration was given to creating a viable assessment protocol for correctional educators. Characteristics of this assessment protocol are presented tentatively, for a number of reasons. First, reading components tests are static measures of performance. Other, more dynamic measures based on alternative assessment strategies (e.g., miscue analysis) and approaches (e.g., portfolios) should be considered as well. Second, as mentioned earlier, the small sample size is insufficient to make generalizations to other incarcerated learners. Third, the study of component-level performance among adult literacy learners (and the instructional implications of this often *uneven* performance) is in its infancy. More research is needed before we can extend this new knowledge to proven instructional methods for adult literacy learners – both incarcerated and free.

Reading components profiles help practitioners and learners see reading as non-linear. By doing so, they make it harder to place all literacy learners on one continuum based on silent reading comprehension test scores. And they help learners – even at the lowest literacy levels – articulate their strengths and not merely their needs. Most importantly, reading components-based assessments may help practitioners and learners plan instruction more purposefully.

References

- Adams, M. J. (1990). *Beginning to read. Thinking and learning about print*. Cambridge MA: MIT Press.
- Bruck, M. (1990). Word recognition skills of adults with childhood diagnoses of dyslexia. *Developmental Psychology*, 26, 439-454.
- Bruck, M. (1992). Persistence of dyslexics' phonological awareness deficits. *Developmental Psychology*, 28, 874-886.
- Bureau of Justice Statistics. (2006). *Corrections statistics*. U.S. Department of Justice: Author. Retrieved April 29, 2006 from: <http://www.ojp.usdoj.gov/bjs/correct.htm>
- Center for Applied Linguistics (2007). *Diagnostic Assessment of Reading Comprehension*. Washington, DC: Author. Funder: U. S. Department of Education, Institute of Education Sciences. Retrieved on February 19, 2007 from: <http://www.cal.org/projects/diagnostic.html>
- Chall, J. S. (1991, October). *Patterns of adult reading*. Paper presented at the conference on Literacy and Adults with Learning Disabilities, Teacher's College, Columbia University.
- Clark, R. L. & Anderson, S. A. (2000, June). *Illegal Aliens in Federal, State, and Local Criminal Justice Systems*. Washington DC: Urban Institute. Retrieved on October 10, 2006 from: <http://www.urban.org/url.cfm?ID=410366>

- Curtis, M. E. (1980). Development of the components of reading. *Journal of Educational Psychology*, 72, 656-669.
- Curtis, M. E., & Longo, A. M. (1999). *When adolescents can't read. Methods and materials that work*. Cambridge: Brookline.
- Curtis, M. E. (1987). Vocabulary testing and vocabulary instruction. In M. G. McKeown & M. E. Curtis (Eds.), *The nature of vocabulary acquisition* (pp. 37-51). Hillsdale, NJ: Erlbaum.
- Davidson, R. K., & Bruce, K. (2003). *Assessment strategies and reading profiles: Research-based assessment practices for the adult education classroom*. Washington DC: National Institute for Literacy. Retrieved May 17, 2003, from: www.nifl.gov/readingprofiles
- Denckla, M. B., & Rudel, R. G. (1974). Rapid "automatized" naming of pictured objects, letters, and numbers by normal children. *Cortex*, 10, 196-202.
- Dunn, L. M., & Dunn, L. M. (1997). *Examiner's manual for the Peabody Picture Vocabulary Test (3rd ed.)*. Circle Pines, MN: American Guidance Service.
- Fitzgerald, J. (1995). English-as-a second-language learners' cognitive reading processes: a review of research in the United States. *Review of Educational Research*, 65, pp. 145-146.
- Haigler, K. O., Harlow, C., O'Connor, P., & Campbell, A. (1994). *Literacy behind walls: Profiles of the prison population from the National Adult Literacy Survey*. Washington DC: U.S. Department of Education, Office of Education Research and Improvement.
- Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing: An Interdisciplinary Journal*, 2, 127-160.
- Karlsen, B., & Gardner, E. (1986). *Adult Basic Learning Examination: ABLE*. San Antonio, TX: The Psychological Corporation, Harcourt Brace Jovanovich.
- Kruidenier, J. (2002). *Research-based principles for adult basic education reading instruction*. Washington, DC: National Institute for Literacy.
- Lorr, M. (1983). *Cluster analysis for social scientists*. San Francisco: Jossey-Bass.
- McShane, S. (2005). *Applying research in reading instruction for adults: First steps for teachers*. National Institute for Literacy. Retrieved on May 3, 2006, from: <http://www.nifl.gov/partnershipforreading/publications/html/mcshane/index.html>
- Moll, L. C. (1998). Turning to the world: Bilingual schooling, literacy, and the cultural mediation of thinking. In T. Shanahan & F. V. Rodriguez-Brown (Eds.), *Forty-seventh yearbook of the National Reading Conference* (pp. 59-75). Chicago: National Reading Conference.

- Mustard, D. (2001). Racial, Ethnic and Gender Disparities in Sentencing: Evidence from the US Federal Courts. *The Journal of Law and Economics*, 44, no. 1, pages 285-314
- Muth, W. R. (2004). *Performance and perspective: Two assessments of federal prisoners in literacy programs*. Doctoral dissertation, George Mason University, 2004. Dissertation Abstracts International, 65, 06A. (UMI No. AAT 3136247)
- Muth, W. R. (2005). Two ways to assess literacy learners in prison. *Focus on Basics*, 7, 35-39.
- Muth, W. R. (2006). Literacy learners in prison: Finding purpose in the 'second space'. In P. E. Linder, M. B. Sampson, J. R. Dugan & B. A. Brancato (Eds.), *2005 College Reading Association yearbook: Vol. 27. Building bridges to literacy* (pp. 19-34). Commerce: Texas A&M University.
- National Center for ESL Literacy Education. (2003). *Adult English language instruction in the 21st century*. Washington, DC: Center for Applied Linguistics.
- Read, C. (1988). *Adults who read like children. The psycholinguistic bases*. Report to the US Department of Education. Madison: Wisconsin Center for Educational Research, University of Wisconsin-Madison.
- Read, C., & Ruyter, L. (1985). Reading and spelling skills in adults of low literacy. *Remedial and Special Education*, 6, 43-52.
- Rose, D. R., & Clear, T. R. (2002, January). *Incarceration, reentry, and social capital: Social networks in the balance*. Paper presented at the From Prison to Home Conference hosted by the U.S. Department of Health and Human Services and The Urban Institute, Bethesda, MD. Retrieved April 29, 2006, from:
<http://aspe.hhs.gov/hsp/prison2home02/Rose.htm>
- Rosner, J. (1975). Test of Auditory Analysis Skills. In J. Rosner (Ed.), *Helping children overcome learning difficulties*. New York: Walker, p. 77-80.
- Roswell, F., & Chall, J. S. (1992). *Roswell-Chall Diagnostic Assessment of Reading and Trial Teaching Strategies*. Chicago: Riverside.
- Strucker, J. (1997). What silent reading tests alone can't tell you: Two case studies in adult reading differences. *Focus on Basics*, 1, 13-17.
- Strucker, J. (2002, June). *NCSALL's adult reading components study (ARCS)*. Paper presented at the conference of the International Dyslexia Association, Washington, DC.
- Strucker, J., & Davidson, R. (2003, November). *Adult Reading Components Study (ARCS). A NCSALL Research Brief*. Cambridge, MA: National Center for the Study of Adult Learning and Literacy. Retrieved July 24, 2006, from:
http://www.ncsall.net/fileadmin/resources/research/brief_strucker2.pdf

- Travis, J., Solomon, A., & Waul, M. (2001). *From prison to home: The dimensions and consequences of prisoner reentry*. Urban Institute. Retrieved July 12, 2004, from:
http://www.urban.org/UploadedPDF/from_prison_to_home.pdf
- United States Bureau of Prisons. (2004, April). *SENTRY*. Internal Inmate Information System. Retrieved April 5, 2004.
- United States Sentencing Commission. (n.d.). *2000 sourcebook of federal sentencing statistics*. Retrieved March 17, 2002, from
<http://www.ussc.gov/ANNRPT/2000/SBTOC00.htm>
- Wechsler, D. (1997). *Wechsler Adult Intelligence Scale®—Third Edition*. San Antonio, TX: Harcourt Assessment.
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson-III*. Itasca, IL: Riverside.
- Wright, R. (2006). *In the borderlands: Learning to Teach in Prisons and Alternative Settings*. Fredericksburg, Virginia: Digital Impressions.