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Advances and Remaining Challenges in Adult Literacy Research

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Abstract

Low literacy levels in adult learners pose an educational, and public health challenge to practitioners and the scientific community. Increasing demands placed on literacy can limit opportunities in the workplace and access to health related resources, negatively impacting public health. Current estimates suggest over forty million adults in the U.S. possess only the most basic and concrete literacy skills (National Center for Education Statistics, 2003). Despite the estimated number of learners possessing minimal literacy skills in English in the U.S., there remains a paucity of research focused on adult learners to inform remediation efforts. This special issue represents an important step in highlighting the current scientific knowledge base and the implications for future directions and lines of inquiry with adult learners.

Low literacy levels impact a range of economic, education, and health outcomes for adults in the United States. The scale of the challenge of addressing the literacy needs of adult learners in the U.S. is far larger than even most literacy researchers realize, and limited literacy significantly limits education outcomes and opportunities for low literate adults, as it does for the large number of adult literacy students who are learning English as a second language. Low literacy also poses broader public health issues, not the least of which involves using literacy to access and navigate the health care system and health information. The articles included in this special issue on *Models of Reading Component Skills in Low Literate Adults* aim to further elucidate the nature of the literacy challenges that adult basic education students face and to move the research field towards elaborated models of the acquisition of reading skills for this group, with the broader goal of informing the nature and delivery of intervention and services now and in the future.

Compared to the large amount of research conducted with younger readers, there has been a relative paucity of work describing the nature of the literacy skills possessed by adult basic and secondary education students and in understanding the acquisition of skill development in reading for this group (Kruidenier, 2002). This greater research emphasis on younger readers over several decades belies the scale of the literacy problem in the adult population¹.

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The opinions and assertions presented in this chapter are those of the authors and do not purport to represent those of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, the National Institutes of Health, the U.S. Department of Health and Human Services or the U.S. Department of Education.

We do however have a recent, broad snapshot of the literacy skills of the adult population in the U.S. via the National Assessment for Adult Literacy (NAAL).

The 2003 NAAL assessed English literacy skills across a nationally representative sample of the U.S. population, age 16 and over. The NAAL was administered to approximately 1,800 adults living in households and 1,200 prison inmates. It provides the best look at the literacy skills of the American adult population since the 1992 National Adult Literacy Survey. The NAAL defined and measured literacy proficiency in three dimensions: prose, document, and quantitative (see Kutner et al, 2007). For each of these literacy dimensions, individual proficiency was measured on a scale from 0 to 500 and this scale was broken down further into four literacy levels: Below Basic, Basic, Intermediate, and Proficient. However this does not capture or reflect the literacy performance of all the subjects in the study; some of the subjects contacted for participation were unable to answer all but a very few of the assessment items and were therefore considered nonliterate for the purposes of this assessment.

Data from the 2003 NAAL show that approximately 11 million Americans are estimated to be nonliterate in English, performing below the category of Below Basic. As context, this estimate includes approximately 4 million individuals who speak neither English or Spanish, the two languages used in the personal interview and assessment, but this still leaves an estimate of 7 million individuals who are speakers of either English or Spanish and unable to complete even the easiest assessment questions. Additionally 30 million individuals perform at Below Basic prose literacy levels (National Center for Education Statistics [NCES], 2003). To provide some perspective on this category, a Below Basic literacy level in adults “indicates no more than the most simple and concrete literacy skills” (Kutner, Greenberg, & Baer, 2005). Disconcertingly, ethnic minorities such as Blacks and Hispanics are overrepresented in the Below Basic level in prose literacy relative to their overall percentage of inclusion in the NAAL sample, with 24% of Blacks and 36% of Hispanics sampled scoring in the Below Basic levels (Kutner et al., 2005). The literacy challenges are even greater when one looks solely at the subset of adults in the NAAL sample who spoke only Spanish before beginning school; 61% of these individuals scored at the Below Basic level for prose literacy.

Literacy performance has implications across a wide range of life skill issues, for example access to and understanding of health related information (E.g., Berkman et al., 2004). The NAAL also measured estimates of adults’ health literacy skills. The health literacy items were developed to fall within the three main literacy categories on the NAAL: prose, document, and quantitative literacy. The distinguishing feature for these items was the health topics that they tapped. Of interest in the context of this special issue and of the earlier data mentioned are the performance levels for two subsets of individuals: minority groups that were overrepresented in lower literacy levels of the NAAL, and adults who have not obtained a high school diploma or its equivalent. Although about 14% of all adults scored within the Below Basic range on health literacy topics, the percentages for Blacks (24%) and Hispanics (41%) were again higher than for the overall population (Kutner, Greenberg, Jin, & Paulsen, 2006). If we examine education level independent of racial or ethnic group, individuals who reported not completing high school and/or passing the General Education Development (GED) test had lower levels of health literacy than for those who completed high school and/or post-secondary and also of individuals still enrolled in high school. Finally, if we examine the health literacy knowledge of individuals reporting

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¹For our discussion, adults are defined as individuals 16 years of age or older, thus it could include individuals who have left high school and may be pursuing Graduate Equivalent Diplomas.

that they receive Medicare or Medicaid, 27% of Medicare recipients and 30% of Medicaid recipient had Below Basic levels of health literacy.

Lower levels of literacy have potentially negative implications for the health and wellbeing of adults (U.S. Department of Health and Human Services [HHS], 2004). It also seems clear that there are significant implications for the children of low literate parents or grandparents serving as caregivers, as lower literacy levels for caregiving adults can limit access and understanding of health related information relevant to their child's health. In addition, low literacy levels can limit the types of literacy interactions that these parents may be able to engage in at home. The NAAL data provide insight into the relationship between Of those adults at the Below Basic level who care for children at least 10 days a month, 41% had not read to their child under the age of 8 years in the week prior to participating in the assessment; in comparison, only 14% of adult caregivers in the Proficient prose literacy level had not read to their child in the previous week. Adults at the Below Basic level also were less likely to report that their children ages 3–5 years knew the letters of the alphabet, compared with adults at the Proficient prose literacy level. Finally, not surprisingly, 92% of adults at the Proficient prose literacy level reported helping their school aged child at least once week with his/her homework, in comparison to 75% of adults at the Below Basic prose literacy level; these adults also reported seeing their child engaged less frequently in reading activities than adults with higher prose literacy levels (Kutner, Greenberg, Jin, Boyle, Hsu, Dunleavy, & White, 2007). This snapshot of the literacy skills of all adults in the U.S. suggests a strong need for continued attention to building literacy skills and to health knowledge in our adult population.

High school data reinforces the ongoing need for adult literacy intervention. Recent estimates for literacy performance from the main National Assessment of Education Progress (NAEP) for 12th grade students in the U.S. indicate that there will be a continued need to develop the literacy of adults. To highlight this need, over a quarter of 12th grade students perform at Below Basic levels in reading and/or writing near the end of high school (NCES, 2005)². One could argue that the 12th grade NAEP data may reflect an overestimate of the literacy skills of the population of individuals of 12th grade age, because the assessment does not include individuals who have already dropped out of high school. This is notable given the relatively high drop rates in some states and for certain ethnic groups (Laird, Cataldi, KewalRamani, & Chapman, 2008). Nationwide, the percentage of students graduating from public high schools in 4 years can vary markedly from state to state, with minimum estimates of about 56% to 88% for states in the 2004–2005 school year. At a national level, which provides the broader scope of the problem, in 2006, approximately 9.4% of individuals aged 16–24 were not enrolled in high school and did not possess a high school diploma or its equivalent. This is a substantial number of individuals, who represent only a subset of the broader population that may possess lower literacy levels. Although we are not suggesting that lower literacy rates are the sole reason for the high drop rate, these data illustrate the sheer number of future workers entering the workforce and exiting secondary educational without a degree, who likely have suboptimal skills in areas that could include literacy. That literacy is a key factor in high school dropout seems a reasonable assumption, given that over half of the adults scoring in the NAAL Below Basic level in prose literacy had not obtained a high school diploma or its equivalent (Kutner et al., 2005). In tandem with the current needs of adults already in the workplace, both the data

²It is important to acknowledge that concerns have been raised over the interpretation of the 12th grade NAEP data. A common concern that is raised is that students are uninterested and unmotivated to answer the questions in the NAEP. This scenario may very well be accurate for some students but to the authors' knowledge this remains anecdotal. However, the response rate for the 12th grade portion of the most recent NAEP was lower than for the 4th or 8th grade sample (e.g., Chromy, 2005).

from the 12th grade NAEP and the high school dropout rates reinforce our claim for a current and future need for attention to the literacy needs of adults with lower literacy skills.

In contrast to these relatively high estimates of individuals with low literacy levels, projections for many high growth jobs indicate increasing educational demands (Liming and Wolf, 2008). Labor statistics also reinforce a continuing and ever more important need for improved adult literacy skills. Data show that higher literacy levels correlate with better wages; adults with a high school diploma or GED certificate earn significantly more per year than those without (e.g., Liming & Wolf, 2008; U.S. Census Bureau, 2007). More generally, individuals with higher literacy levels are more likely to be employed full-time than those with lower literacy levels (Kutner et al., 2007). In addition to the potential negative economic impact and implications for limiting employment success, low literacy levels also can limit access to health related information (e.g., Berkman et al. 2004; HHS, 2008).

In order to better prepare our current workforce and prepare to meet the needs of future adults who may struggle with literacy, we need to place increased attention on the specific nature of the difficulties that these adults face in acquiring or strengthening their reading and writing skills; concomitantly, we must strengthen our understanding of how to intervene effectively based upon those needs. For those low-literate adults without a high school diploma, developing the skills necessary to pass the GED or to obtain a high school diploma could provide significant economic benefits. By addressing low-literate adults' literacy needs effectively, our society has the potential to improve economic and health outcomes of adult learners and their families and maintain a robust economy. As even entry level jobs demand increasing literacy skills, ensuring literacy for adults has become a significant social imperative.

There is a clear and compelling need to improve the literacy skills of those adults with low level skills. As this is a national imperative, a series of Federal initiatives have emerged, ranging from legislation that provides support for literacy instruction to targeted research to identify effective reading instruction for adults. One important piece of legislation that provides support for adult literacy is The Workforce Investment Act (WIA), Title II of The Adult Education and Family Literacy Act (AEFLA). This Act specifically targets those 16 years and older who are not in school. The Act broadly aims to help adults become literate and build the knowledge and skills necessary for employment and self-sufficiency, assist adults in the completion of a secondary school education, and assist adult parents in obtaining the educational skills necessary to become full partners in the educational development of their children. Importantly, the AEFLA requires that the adult educational practices used have been "proven to be effective in teaching individuals to read." (Sec 231, (e4), (B)).

In recognition of the need for research to inform our nation's effort to increase the literacy skills for adult learners, in 2000 a working group on adult literacy was convened by the National Institute for Literacy (NIFL) and hosted by the National Center for the Study of Adult Learning and Literacy at the Harvard Graduate School of Education (a center funded by the US Department of Education). The group discussed the state of the science of adult literacy, emphasized the centrality of reading and writing to Adult Basic Education, and indicated that research was needed that would focus on the complex, integrated process of reading. They stated that such research should be conducted in both adult literacy programs and family literacy activities with low-literacy parents. As a foundation for further discussion, a synthesis of extant literature on adult literacy was commissioned, using criteria similar to that used by the National Reading Panel. Although there was so little experimental research reported in the literature that meta-analyses were impossible, a review of the

available literature was produced. This document highlighted the need for additional rigorous research (Kruidenier, 2002).

In August 2001, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD), NIFL and the Office of Vocational and Adult Education (OVAE) of the U.S. Department of Education convened a panel which included expert researchers, practitioners, and government funding officials to continue the discussion of research needs³ (HHS/NIH/NICHD, 2004). The panel stated that, while there is a large body of rigorous research on effective instructional methods for early reading for school age children and on the theoretical underpinnings of reading difficulties in the school years, there has been far less scientific study of literacy interventions with adult learners. The panel recognized the need to increase understanding of the specific cognitive, sociocultural and instructional factors, and the complex interactions among these factors, that promote or impede the acquisition of English reading and writing abilities within adult and family literacy programs and activities. Specifically, the group called for a program of systematic, programmatic, methodologically rigorous multidisciplinary research to determine the most effective instructional methods and program organizational approaches for both adult and family literacy programs

The NIFL panel drew heavily on what was known about literacy in elementary school children, given the dearth of empirical research on adult literacy. The workshop panel agreed that valuable information can be drawn from the research findings on reading processes and instructional approaches for children in kindergarten through grade 12, and that this information about the basic skills foundational to the reading process, as well as the rigorous methods used to demonstrate effectiveness of instructional approaches, could be informative to efforts to establish a strong, rigorous base of empirical research on adult literacy. That is, the conceptualization, design, and implementation of intervention efforts could build upon established theory and evidence from studies of reading acquisition that predict reading difficulties in children. In all such research, moreover, the panel agreed that literacy should be viewed as including both reading and writing abilities, and that these skills require the mapping of print onto oral or signed language so that written material can be well understood and used effectively and efficiently as a source of information.

The panel identified several key elements for research on adult literacy. They indicated that first, such research must define the population (both in terms of demographic characteristics and status on the components of reading) that requires adult literacy services. Other key areas included assessment, particularly the development of better measures and effective uses of assessment data; identifying effective program types and, more importantly, linking program outcomes to learner characteristics to identify which programs are most effective for particular types of learners; examining the role of learner motivation, especially the factors that increase learner motivation; and further examining basic reading processes in adult learners, such as the degree of automaticity required to function as a reader and the nature of the interaction between reading rate and accuracy. They also noted that it would be important to identify the optimal amount of instructional time required to produce gains in particular component skills, and highlighted the opportunities that could exist if we better understood the role technology could play in increasing access to and effectiveness of program services. The need to develop and test hypotheses and develop conceptual frameworks within which to examine specific issues of program effectiveness was strongly acknowledged, as was the role of contextual factors.

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³Note that, while the Kruidenier document was not published formally until 2002, this panel cosponsored by NIFL had access to the working draft of that document.

To begin to meet this need and address the specific areas outlined by the panel, the NICHD, NIFL, and OVAE published a research solicitation in October, 2001, committing a total of \$18.5 million over the five-year period from 2002–2006 (\$3.7 million per year) to support this research. In September 2002, six research awards were made; these studies designed, developed, implemented and examined the effectiveness of adult literacy interventions for low literate adults. Because of the evidence from prior research on literacy development and children, the studies focused on the role of decoding, vocabulary, fluency, and comprehension instruction in adult literacy and on the explicitness of instruction. The research teams screened nearly 73,000 adults with low literacy skills, in order to identify the more than 3,800 research participants for these studies. More than 60% of those taking part in the studies were minorities, predominantly African American and Hispanic/Latino. A large number of participants were individuals who were not native speakers of English, a group that represents a large proportion of students in Adult Basic Education and adult literacy programs. The research was conducted in more than 80 sites in at least 16 states across the U.S. All six projects employed experimental or quasi-experimental designs, and at least four of these used combined quantitative and qualitative research methods.

This special journal issue presents data modeling efforts from four of these projects. As the research articles in this issue indicate in some detail, the lack of models accounting for the acquisition and development of adult reading skills has been limiting for the field (Comings & Soricone, 2007). Therefore the field has defaulted to a reliance upon models of the reading process in younger readers. This reliance over the long-term is inherently limiting given that the acquisition and development process and the composition of effective interventions for older struggling readers may diverge in important ways from those readers who successfully acquire literacy skills at younger ages. These projects take an important step forward by modeling the adult reading process for diverse groups of adult struggling readers, including non-native speakers of English. Collectively these papers examine the literacy skills of adult basic and secondary education level students through various modeling efforts: examining the fit for different classes of reading models for both native and non-native English speaking learners (Nanda, Greenberg, & Morris, 2010; MacArthur, Konold, Glutting, & Alamprese, 2010); examining how these readers' skills fit within the scope of predictions from the simple view of reading (e.g., Gough & Tunmer, 1986; Tunmer & Hoover, 1992); suggesting adaptations to the simple view of reading (Sabatini, Sawaki, Shore, & Scarborough, 2010); and examining a path model of the reading process with adult learners (Mellard, Fall, & Woods, 2010). These systematic modeling efforts bring us closer to understanding how various assessment measures align to underlying literacy constructs for both native and non-native English speaking, low-literate adults.

These attempts do however need to be validated by other researchers with separate samples for both native and non-native English speakers. Importantly, ongoing efforts are needed to examine how effectively we can map commonly used reading and cognitive assessments onto the reading constructs in this low literate adult population. Continued efforts to understand this relationship will be important in order to facilitate further the development and testing of literacy models for this group. These efforts should inform both our foundational understanding of the cognitive processes underlying skill acquisition in this group as well as our current and future efforts in translating this knowledge to classroom and workplace settings. As such, the four studies presented here represent an important step bringing us closer to a scientific understanding of adult literacy.

There is and continues to be an urgent need for continued research and attention to the needs of adult learners. Despite the progress made toward understanding the needs of and how best to intervene with adult learners from the projects, in this special issue and the work of others, there remains a significant need for continued research to address the educational

and public health needs of adult learners. The adult learner population is not a monolithic group and an understanding of the process of literacy skill development for these individuals with varying sets of needs will continue to be critically important, as is the longer term goal of positive educational and public health outcomes for these individuals. Adult education and workplace and vocational technology providers deliver service to a broad range of adults, including those who are not literate because they have not learned or have not been adequately taught to read and write, those for whom English is a second language who may or may not be literate in another language, those with learning disabilities that may or may not have been previously identified, and those who need or simply want to strengthen their literacy skills for personal or professional reasons. An understanding of how best to provide for the development of literacy skills as well as factors such as motivation for these learners is crucial if we are to accomplish the goal of more effective interventions for these learners..

There was in 2001 and continues to be very little high quality, well-controlled research on the optimal methods of teaching and supporting the development of first or second language literacy in low-literate adults; this is particularly true in the area of writing. Continued efforts to refine and develop new interventions to address the reading *and writing* skills of these learners are of continuing importance. To advance the refinement and development of new interventions, theoretical models must be developed that posit accounts of the literacy skills development in diverse adult learners, including both English language learners and native speakers of English. This foundational information will inform the development and refinement of instructional interventions and continue to move us in a direction that informs practice. Data from relevant adult populations will not only build important new information, it will also enable us to more specifically address the limitations of extrapolating from literacy research on younger learners.

One necessary step to inform model development and instructional practice is the development and norming of literacy measures with diverse adult learners, including significant numbers of low-literate adults. The inadequacy of current measures of literacy skills for this population poses a significant barrier to current and future research and instructional efforts; importantly, continued modeling efforts and assessment development hold the promise of aiding in refinement of literacy constructs with this population and others.

Additionally, more research is needed on basic learning in adults. In order to better understand and provide services addressing the needs of this population, we continue to need research that will develop an in-depth understanding of the factors and conditions that hinder the learning process for the diverse population of adult learners. Part of this process should include gathering data to better enumerate individual learners' strengths and relative weaknesses in literacy and related cognitive processing. We must consider a range of factors such as programmatic and instructional conditions and cognitive and learning issues that may impact the success of various instructional approaches and specific interventions and pay particular attention to examining how to intervene with those not succeeding with effective standard instructional approaches.

A major focus of instructional delivery has been and should continue to be on reading in this population. However, far more needs to be known about how to best support the development of writing skills in adult literacy students, how writing may support broader literacy skill development, and what are the most effective ways to intervene with this group. It will be imperative to study these learners in a range of settings, not limited to formal adult basic and secondary education settings, e.g., high school graduates enrolled in developmental college courses, military recruits, and those in workplace literacy settings. Novel approaches should be examined.

Although understanding the instructional needs of the diverse group of learners is sacrosanct, examining programmatic structure and other logistical issues is also crucial. Understanding how these factors and others (such as open or closed enrollment) impact attendance and student retention will better enable practitioners to deliver more time intensive interventions to greater numbers of learners. Given the challenges and constraints on student attendance and retention in adult education settings, investigations into the use of distance and virtual learning technologies may prove fruitful; however, research into effective organization and delivery of content in this medium as well as related support services will be critical for this to be an effective future venue.

Much work remains if we are to understand literacy skill development and effective intervention in these adult groups. The field is now moving in a more concerted scientifically rigorous direction, emphasizing model development as a means to inform our foundational understanding of adult instruction and intervention. This special issue of the *Journal of Learning Disabilities* is an important step towards this goal.

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