How Well—Still Good?
Assessing the Validity of the American Community Survey English-Ability Question

Erik R. Vickstrom, Hyon B. Shin, Sonia G. Collazo and Kurt J. Bauman
Education and Social Stratification Branch
Social, Economic, and Housing Statistics Division
U.S. Census Bureau

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Abstract

The "English-ability question" has been the U.S. Census Bureau's principal survey item for assessing the population's English proficiency since its appearance in the 1980 decennial census. This study is a first step in attempting to assess the continued validity of the English-ability item using data from the 2003 National Assessment of Adult Literacy (NAAL). We first attempt to assess the empirical comparability of the NAAL and the 2003 American Community Survey (ACS) by comparing the two surveys' distributions of some key demographic variables. We then analyze NAAL prose literacy scores and find that the self-reported English ability of NAAL speakers of languages other than English (LOTE) differentiates identifiable levels of literacy, and that among groups of NAAL LOTE speakers, those who report speaking English "very well" have the literacy profiles that come closest to those of English-only speakers. This study thus provides evidence supporting the use of the English-ability item as a valid measure of English literacy. In addition, these results may provide some guidance regarding the average literacy levels associated with different responses to the ACS English-ability question.

Introduction

Since 1980, the U.S. Census Bureau has measured the English proficiency of Americans who speak a language other than English at home with a simple self-rating question. As the number of people speaking a language other than English has increased, and the programmatic uses of the English-ability question have expanded, there is increasing interest in reaffirming the basic validity of people's self-assessment of how well they speak English.

Using data from the Census Bureau's American Community Survey (ACS) and the Department of Education's National Assessment of Adult Literacy (NAAL), this paper investigates how self-rated English ability relates to English-language literacy. While no tests of English-language literacy are available in the ACS microdata for cross-validation of the English-ability question, the NAAL data include both self-rated English ability and tests of English literacy in multiple domains. After assessing the conceptual comparability of the two surveys and testing for statistical differences between some of their key distributions, we use the English literacy data in the NAAL to assess the potential validity of the self-rated English-ability question as it appears in both surveys. We find that self-reported English ability of speakers of languages other than English differentiates between identifiable levels of literacy and provide concrete examples of literacy capabilities associated with those levels. Results also show that among speakers of languages other than English, those who reported speaking English "very well" have literacy profiles that come closest to those of English-only speakers.

Background

The Census Bureau has asked about language use in some form since the 1890 decennial census. Some censuses included questions about "mother tongue" (the language spoken in the household when the respondent was growing up) or asked language questions of only the foreign-born population (Kominski, 1989). The 1980 decennial census asked a three-part question of everyone aged 5 and older. These questions were: (1) "Does this person speak a language other than English at home?" (2) "What is this language?" and (3) "How well does this person speak English (very well, well, not well, not at all)?" Only people who indicated speaking a language other than English at home were asked the second and third questions. The third question is referred to as the "English-ability question." After 1980, this three-part question subsequently appeared on the 1990 and 2000 decennial census long forms, and has been a part of the American Community Survey (ACS) since its inception.[1]

The English-ability question is central to meeting three major governmental needs. The first of these is the identification of local areas required to provide voting materials in minority languages under the Voting Rights Act of 1965 (as amended).[2] The second is to allocate funds for school districts working to address the needs of students with limited English proficiency (LEP). The No Child Left Behind Act of 2001 identified the English-ability data from the ACS as one of two allowable data sources for determining the number of LEP students in each state

[1] The "long form" was a questionnaire distributed to a sample of one in six households at the time of the decennial census count. The long form included detailed questions on social and economic characteristics of individuals and households. In contrast, the "short form" questionnaire was distributed to 100 percent of the population and included a limited number of questions. For more information on the evolution of the Census Bureau's decennial census questionnaires, see < https://www.census.gov/history/www/through_the_decades/questionnaires/>.l

[2] For more information on the Voting Rights Act, visit the Department of Justice, Civil Rights Division website at http://www.justice.gov/crt/about/vot/.

(National Research Council, 2011). The third is to help determine the need for federal programs under Executive Order 13166 to provide access to government resources for those who have limited ability to communicate in English.[3] These governmental needs drive the main research question of this study: how well does the English-ability question, as it has appeared in decennial censuses and the ACS, actually measure English ability? In other words, is the English-ability question a valid measure of English ability?

The subjective nature of the English-ability question motivates concerns about its validity. Siegel et al. (2001) outline many of these concerns, which include varying standards of comparison, interviewer effects, and proxy responses. Different respondents may have different standards of comparison or reference groups in mind when answering the English-ability question. In other words, respondents may assess their proficiency not against an absolute standard but relative to the proficiency of native speakers of English or to that of other members of their community or ethnic group (Siegel et al., 2001). Another concern about the item's validity comes from potential interviewer effects. Interviewers may influence the self-assessments of respondents who undergo personal interviews through social desirability effects or constraints on unrealistic reporting of ability, or may apply their own assessments of a respondent's ability based on the accent or other characteristics of the respondent (Siegel et al., 2001). Finally, Siegel et al. (2001) also argue that proxy responses for other members of the respondent's household might lead to systematic differences in assessments of ability when these assessments are confounded with language limitations that prevent certain household

[3] For more information on Executive Order 13166, see < http://www.justice.gov/crt/about/cor/13166.php>.

members from responding to the survey. These potential and unmeasured threats to this item's validity highlight the difficulty of measuring English ability with a subjective assessment.

The array of concerns about the validity of the English-ability question has triggered efforts to assess how well this item captures English ability. Indeed, Siegel et al. state that "the census measure of English proficiency has been subjected to unusually intense scrutiny and analysis" (2001: 7). The validity issue first received attention following the initial use of the English-ability question in the 1980 decennial census. The Census Bureau reinterviewed respondents to the 1980 census and, in addition to the English-ability question, asked them about their difficulty in filling out forms—such as an application for a driver's license or a job—in English. The English-ability question was highly correlated with ability to carry out this task: 96 percent of respondents who said that they spoke English "very well" reported no difficulties in filling out a form; this dropped to 78 percent for those who reported speaking English "well" (Siegel et al., 2001).

Further efforts to study the validity of the English-ability question came when the Census Bureau conducted the English Language Proficiency Study (ELPS) in 1982 for the Department of Education (U.S. Department of Education, 1987). The ELPS administered tests of English-understanding to individuals in their homes. The demographic component of the questionnaire included the English-ability question from the 1980 decennial census. Analysis of the ELPS data showed a strong correlation between the English-ability question and English-proficiency test scores: people who spoke English "very well" had failure rates as low as those who spoke only English, while those who reported speaking English less than "very well" (i.e., "well" or worse) had statistically higher failure rates (Kominski, 1989). This study thus showed

that the English-ability question possessed some validity, in that self-reported ability was correlated with measured proficiency.

Additional research into the validity of the English-ability question used the 1986 National Content Test (NCT) to examine reported ability to speak English along with reports of childhood language, frequency of language used, and ability to read and write English. The NCT, conducted by the Census Bureau to test new content for the 1990 decennial census, was a national survey of 26,000 households. Respondents completed the decennial census long form, which included the standard multipart language question. A quarter of respondents were reinterviewed three months later. The reinterview included additional items related to language use, including language spoken in the home as a child and "objective" indicators such as ability to read a book or write a postcard in English (Kominski, 1989).

An analysis of the matched interview-reinterview data from the NCT found consistency between self-reported English ability and a variety of other language-related items (Kominski, 1989). Almost all respondents who reported speaking English "not at all" or "not well" spoke a non-English language at home as a child or used a non-English language with family or friends with concomitant infrequent use of English (Kominski, 1989). In addition, Kominski (1989) reported that spoken English ability was positively correlated with reading and writing ability in English, suggesting an association between self-reports of speaking ability and indicators of literacy.

While this evidence is supportive of the English-ability question in the context of the decennial census long form, no research has been conducted to examine its continued validity in the context of the ACS. Furthermore, none of the efforts to assess the validity of the question

have compared self-assessments to standardized tests of English proficiency. A recent National Academies report highlighted some of the potential limitations of the English-ability question and recommended that the Census Bureau conduct additional research on the accuracy of the ACS language item (National Research Council, 2011). Is the venerable metric as assessed in the 1980s still valid thirty years later? This paper will use data from the National Center for Education Statistics to assess the potential validity of the English-ability question in the ACS.

Data and Methods

The main challenge in assessing the validity of the ACS's English-ability question is the lack of objective literacy data. The ACS does not include tests of English literacy like those that appeared in the ELPS, nor has the Census Bureau conducted any ACS reinterview studies featuring literacy items. The National Assessment of Adult Literacy (NAAL), on the other hand, provides an opportunity to conduct a test of an English-ability question's validity because it includes both self-reported English ability and an array of tests of English literacy. The first part of this paper's analysis examines the potential comparability by testing for statistical differences between the ACS and the NAAL, with the goal of assessing if the NAAL sample provides a reasonable proxy of the ACS's sample.[4] The analysis will then focus on the relationship between self-reported English ability and objective measures of English literacy in the NAAL.

[4] Linking the ACS and NAAL microdata would clearly be ideal for this analysis, but we are not aware of a way to accomplish this linking.

American Community Survey[5]

Since 2000, the ACS has included the language questions of the 1980, 1990, and 2000 decennial censuses. Shifting the social and demographic questions from the census long-form to the ACS allows analysts and researchers to track trends on a yearly basis instead of the once-a-decade analysis they were limited to with decennial census data. To enhance the potential comparability with the NAAL (see below for details), this analysis uses ACS data from 2003 restricted to the population aged 16 and older.

National Assessment of Adult Literacy[6]

The 2003 National Assessment of Adult Literacy (NAAL), conducted by the National Center for Education Statistics, measured three types of literacy to assess the adult (aged 16 and older) population's ability to comprehend written materials in their home, at work, and the community. Prose literacy measured the respondents' ability to read and interpret information from news, brochures, and instructional materials. Document literacy measured the knowledge and the skills needed to navigate documents such as job applications, transportation schedules, and maps. Quantitative literacy measured the knowledge and skills needed for quantitative tasks, such as balancing a checkbook, calculating out interest on loans, and figuring out a tip (Kutner et al., 2007).

[5] Source: U.S. Census Bureau, 2003 American Community Survey (ACS). Data are subject to error arising from a variety of sources. For further information on the ACS sample, weighting procedures, sampling error, nonsampling error, and quality measures from the ACS, see <http://www.census.gov/acs/www/Downloads/data_documentation/Accuracy/accuracy2003.pdf>.

[6] Source : U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy (NAAL). Data are subject to error arising from a variety of sources. For further information on the NAAL sample, weighting procedures, sampling error, nonsampling error, and quality measures from the NAAL, see <http://nces.ed.gov/pubs2009/2009476.pdf>.

The NAAL used a background questionnaire to gather information on the social and demographic characteristics of its sample population, including sex, age, and educational attainment. It also asked several questions on language use, including self-reports of English speaking, writing, reading, and listening ability along with questions about the respondent's experience speaking a language other than English.

The next section compares the sample design and questionnaire items of the two surveys, and the initial analysis of this report then tries to assesses the comparability of the 2003 NAAL and the 2003 ACS by testing for statistical differences between the distributions of these two surveys by age, sex, region, country of birth, language spoken, and English-speaking ability. This comparison helps establish the utility of the NAAL for assessing the English-ability question. While there are some fundamental differences between the two surveys' target populations and methodologies, the analysis shows that for basic demographic classifications, such as age, the samples are not statistically different. However, for cross-classifications of demographic categories this does not hold. This comparison also informs the choice of the most appropriate variable to designate speakers of languages other than English in the NAAL sample.

Comparability of ACS and NAAL

Assessing the comparability of two surveys requires comparing many dimensions, including operational and sample design, conceptual fit between questions, and testing for statistical differences in empirical distributions. Although the following discussion makes it clear that the NAAL and the ACS are not strictly comparable along design or empirical lines, there is merit in investigating the potential similarity between the two surveys.

Sample Design

The ACS is a household survey with questions asked of everyone in the household regardless of age. The ACS questionnaire collects data on language use and English ability only from those respondents (or proxy respondents) aged 5 and older. In contrast, the NAAL is a survey of the adult population aged 16 and older living in households and group quarters. For this analysis, we limited the ACS sample to those aged 16 and older for better comparability with the NAAL.

While the NAAL methodology included a number of accommodations for adults with disabilities and non-native speakers of English, approximately 3 percent of the adults in the initial sample were unable to participate in the assessment due to a language barrier or a cognitive or mental disability (White and Dillow, 2005). One-third of nonassessed adults (1 percent of the total sample) had cognitive or mental disabilities, while two-thirds of nonassessed adults (2 percent of the total sample) could not be tested because they could not communicate in either English or Spanish. The latter were classified as nonliterate in English and they were not included in the NAAL literacy results because their scores could not be estimated (White and Dillow, 2005). The universe to which NAAL results are applicable is thus adults aged 16 and older who are able to complete at least a basic literacy assessment. In contrast, the ACS does not exclude respondents based on inability to complete literacy tasks. This sample restriction in the NAAL could affect the overall literacy score because a subpopulation that does not speak English or Spanish is excluded.

Comparison of Sociodemographic Distributions of ACS and NAAL

This section compares the basic social and demographic characteristics of the 2003 NAAL and the 2003 ACS. Since it is not possible to directly test for similarity, we look for places where key distributions are *not* statistically different. In this situation, a result of not statistically different gives us little information on how the distributions compare to one another. However, if a result is statistically different, we know there is sufficient evidence to say they are different at the set level of confidence. Therefore, we have chosen to use a confidence interval of 95 percent, rather than the Census Bureau standard of 90 percent.[7] We compare the two surveys' distributions by age groups (16-18, 19-24, 25-39, 40-49, 50-64, and 65 and older), sex, region of residence, and place of birth. We use multiple tests to look for statistical differences between the two surveys. We test for statistical differences between pairwise point-estimates with traditional t-test methods, and we use Rao-Scott χ^2 tests to assess statistical differences between distributions.[8]

The NAAL and ACS have age and sex distributions that are not statistically different, as shown by Table 1. While the age distributions of the two surveys are not statistically different (Rao-Scott $\chi^2 = 10.32$, $p > 0.05$), NAAL estimates produce a higher share of individuals aged 16-18 (6.1 percent vs. 5.3 percent, $p < 0.05$). The sex distributions are not statistically different: both the NAAL and the ACS estimate that the population aged 16 and older was about 48 percent male and 52 percent female (point estimates not statistically different at $p < 0.05$; Rao-Scott $\chi^2 = 0.00$, $p > 0.05$). The two surveys' age-specific sex distributions are also not statistically

[7] Using a 95 percent confidence interval will result in a greater number of comparisons giving a not statistically different result.

[8] Rao-Scott χ^2 tests extend the Pearson χ^2 test to account for sampling error inherent in estimates derived from surveys with complex sampling designs. For more information on the Rao-Scott χ^2 test, see Särndal et al., 1992.

different, with NAAL's estimates differing from ACS estimates only for age 65 and above, where NAAL shows a statistically lower share of females.[9] Much like sex, the regional distributions of the two surveys are not statistically different (point estimates not statistically different at $p < 0.05$; Rao-Scott $\chi^2 = 0.50$, $p > 0.05$), and the age distributions of the two surveys are not statistically different when broken down by region.[10] The overall nativity distributions of the two surveys are not statistically different (point estimates not statistically different at $p < 0.05$; Rao-Scott $\chi^2 = 2.38$, $p > 0.05$). The two surveys' age-specific nativity distributions are not statistically different for ages under 50.[11] For age groups above age 50, however, point estimates and overall distributional tests show a difference between the two surveys, with both comparisons of point estimates and Rao-Scott χ^2 tests showing significant differences.

These descriptive statistics suggest that the overall sociodemographic similarity of the NAAL and the ACS depends on the particular distribution examined. While the two surveys differ in their age-specific distributions of sex and nativity at older ages, the individual distributions of age, sex, and region are not statistically different. These statistical comparisons indicate that there is not sufficient information to reject the null hypothesis of no difference between parts of the distributions, but they do not allow us to conclude that the distributions are the same.

[9] All sex-by-age Rao-Scott χ^2 statistics had a p-value of greater than 0.05.
[10] All region-by-age Rao-Scott χ^2 statistics had a p-value of greater than 0.05 and none of the age-by-region NAAL point estimates was statistically different from the corresponding ACS age-by-region point estimate.
[11] Under age 50, all age-group-specific Rao-Scott χ^2 statistics had a p-value of greater than 0.05 and none of the age-by-region NAAL point estimates were statistically different from the corresponding ACS age-by-nativity point estimate.

Conceptual Comparability: Questionnaire Items

While the ACS and the NAAL differ in how they asked about race, ethnicity, region, place of birth, and educational attainment, the biggest limitations to conceptual comparability are the differences between the language and English-speaking ability questions.[12] The NAAL includes a rich array of indicators of non-English language usage and English ability, but none of these indicators corresponds perfectly with the ACS questions. Tables 2 and 3 list the ACS survey items for speaking a language other than English and English ability, respectively.

While the NAAL asked several questions related to English ability, one is close to the ACS English-ability question. The NAAL questions include self-assessments of English ability in multiple domains (reading, writing, and understanding in addition to speaking) and assessments of limitations in understanding spoken and written English (including face-to-face and telephone conversations, television/movies, bills, and looking up information in a reference book).[13] Table 3 lists the questions on English ability that are closest in wording to the ACS question. One of the questions asked in the NAAL survey ("With regard to the English language, how well do you speak it?") closely resembles the English-ability question of the ACS ("How well does this person speak English?") and has the same response categories ("Very well," "Well," "Not well," "Not at all"). Despite the availability of a comparable English-ability question in the NAAL, the universes to which the English-speaking ability questions apply are different: all

[12] The ACS questionnaire is available on the American Community Survey Questionnaire Archive website at <http://www.census.gov/acs/www/methodology/questionnaire_archive/>. The enumeration table that the NAAL interviewer used to build the household roster is available on page 100 of the *Technical Report and Data File User's Manual* for the 1992 National Adult Literacy Survey (see U.S. Department of Education, 2001). The 2003 NAAL used the same procedures.

[13] To view the entire background questionnaire, see Baldi et al., 2009.

respondents to the NAAL answered the English-ability question, compared to only those respondents who indicated speaking a language other than English at home for the ACS.

Using the NAAL results to assess the English-ability question thus hinges on being able to identify the sub-sample of speakers of languages other than English (LOTE) in the NAAL dataset that best aligns with the ACS sample. The ACS asks respondents if they speak a language other than English at home, while the NAAL asks about language use at multiple points in time. The NAAL collected information on: the language spoken before the respondent entered school; the language spoken while growing up; the first language learned to read and write; the age at which the respondent learned English; and the language the respondent usually spoke at the time of the survey. Table 3 lists the wording of these questions and the associated variables in the NAAL data set and underscores the lack of conceptual correspondence between the NAAL's items and the ACS item: no NAAL item asks about language spoken at home. Due to this limitation, the next part of the analysis will focus on identifying the NAAL LOTE measure that is the least different from the ACS measure.

Language Other Than English (LOTE) Indicator Comparison

To determine which measure of LOTE status best corresponds empirically to the ACS question about language spoken at home, we dichotomized each of the NAAL LOTE measures as shown in Table 2. We then compared the distributions of demographic characteristics and self-reported English ability for each of the LOTE indicators to the ACS distributions. While all of the indicators produce distributions of sociodemographic characteristics that differ from ACS distributions, the indicator based on speaking a language other than English before school

("before school" hereafter) does the best job of approximating some key ACS distributions for the LOTE subpopulation.

Four out of the five NAAL LOTE indicators produce statistically different estimates of the share of the 2003 LOTE population compared to ACS estimates. Table 4 shows that, with the exception of the NAAL "before school" LOTE indicator, all NAAL LOTE indicators produce distributions of LOTE status that had statistically significant Rao-Scott χ^2 test statistics and point estimates that were statistically different from corresponding ACS estimates. The distribution of LOTE status with the indicator using speaking a language other than English before school, however, is not statistically different from the ACS distribution (Rao-Scott $\chi^2 = 0.43$, $p > 0.05$), nor are the point estimates of the percent of LOTE and English-only speakers.

The distributions of sex and region by LOTE status for the NAAL LOTE measures are not statistically different from the sex and region distributions by LOTE status in the ACS data. All sex-by-LOTE Rao-Scott χ^2 test statistics have a p-value of greater than 0.05, and none of the sex-by-LOTE NAAL point estimates are statistically different from the corresponding ACS sex-by-LOTE point estimate. Most region-by-LOTE distributions and point-estimates are not statistically different from the ACS region-by-LOTE distributions and point estimates.[14]

In contrast, the NAAL age and nativity distributions by LOTE status differ from the ACS distributions. With the exception of LOTE speakers identified by having learned English before school, all age-by-LOTE status Rao-Scott χ^2 statistics have a p-value of less than 0.05 with multiple statistical differences in point estimates ($p < 0.05$). All of the NAAL LOTE measures estimate a higher share of English-only speakers 16-18 years old than the ACS. Three out of the

[14] The LOTE indicator based on speaking another language now estimated a lower share of LOTE speakers in the Midwest.

five LOTE measures estimate a lower share of LOTE speakers 25-39 years old while estimating a higher share of LOTE speakers ages 65 and older. The distributions of place of birth across NAAL LOTE indicators are also statistically different from ACS distributions. All nativity-by-LOTE distributions in the NAAL have Rao-Scott χ^2 statistics with *p*-values less than 0.05, and all point estimates are statistically different from ACS point estimates. The NAAL LOTE measures are not statistically different from the ACS LOTE measure in terms of sex and region distributions, but differ for age and nativity distributions.

Unsurprisingly, as Table 5 shows, the distributions of self-reported English ability among English-only speakers across all NAAL LOTE measures are statistically different from the distribution of English ability among ACS LOTE speakers.[15] English-only speakers in the NAAL, regardless of the measure used to define them, skew heavily towards reporting speaking English "very well." This result provides a useful point of comparison as it demonstrates that the NAAL's English-only speakers have a different English-ability profile than the ACS's LOTE speakers.

The distributions in Table 5 also show differences in self-reported English ability between the NAAL LOTE samples and the ACS sample. Four of the five distributions of English ability among NAAL LOTE speakers are statistically different from the ACS LOTE English-ability distribution (Rao-Scott χ^2 $p < 0$ .05). These four distributions also have three or more point estimates of English ability categories that are statistically different from the corresponding ACS point estimate. Figure 1 illustrates these differences: a greater proportion of NAAL LOTE speakers who first learned to read/write a language other than English or currently speak

[15] All Rao-Scott χ^2 statistics had a *p*-value of less than 0.05, and all of the NAAL point estimates were statistically different from the corresponding ACS point estimate.

another language fall into the “not at all,” “not well,” and “well” categories of self-reported English ability than ACS LOTE speakers. Conversely, NAAL LOTE speakers who spoke a non-English language growing up or who learned English at any age are more likely to report that they speak English “very well” than ACS LOTE speakers.

Compared to these four measures, the LOTE speaker distribution created by the NAAL “before school” LOTE measure comes the closes to the distribution of self-reported English ability among LOTE speakers in the ACS. The NAAL “before school” LOTE measure’s distribution of English-ability among LOTE speakers is not statistically different from the ACS distribution (Rao-Scott χ^2 $p > 0.05$) and two out of the four ability-category point estimates do not statistically differ from their ACS counterparts (see Table 5). Furthermore, the “before school” measure’s estimate of LOTE speakers who speak English “very well” is not statistically different from the ACS estimate of LOTE speakers who speak English “very well.” The English-ability distribution of those NAAL LOTE speakers who reported speaking a non-English language before school thus comes closest to the English-ability distribution of the LOTE speakers in the ACS.

These empirical comparisons all point to the LOTE measure based on speaking a language other than English before school as being the best proxy in the NAAL for the ACS measure. While not conceptually identical to the ACS measure, the selected NAAL LOTE indicator is the least different in its distributions of demographic characteristics and self-reported English ability. As a result, we use this measure for the remainder of this paper to identify the NAAL LOTE subsample that comes closest to the LOTE population in the ACS—the subsample that responds to the English-ability question. The next section focuses on using the

LOTE population as identified by reporting speaking a language other than English before school to compare self-reported English ability to objective tests of English literacy in the NAAL.

NAAL Prose Score Analysis

This section will use the NAAL prose literacy scores to test the validity of the self-reported English-ability question that appears on both the NAAL and the ACS. The goal of the NAAL literacy assessment was to capture the full content domain of adult literacy. The literacy assessment used 152 questions intended to simulate real-life situations and the questions were open-ended and required short-answer, instead of multiple-choice, responses. Questions were distributed among 26 booklets using a Balanced Incomplete Block/matrix sampling approach, which allowed different sets of questions to be given to different samples of respondents while ensuring that each block of items contained a balanced sample of tasks for each type of literacy. Each respondent was administered one booklet containing a common set of core screening questions along with three blocks of tasks. Each block took about 15 minutes to complete and contained seven to eleven tasks and four to six stimulus materials (White and Dillow, 2005).

While the NAAL literacy tests allowed the assessment of prose, document, and quantitative literacy, this study will use only the prose literacy scores. The prose assessment focused on reading skills by asking respondents to complete prose-based tasks. In contrast, the document tasks focused on completing forms, while the quantitative assessment required respondents to identify, describe, or perform an arithmetic operation. The prose assessment seems most comparable to the adult English proficiency tests on the ELPS, which were designed

to measure the language skills necessary for effective access to public service programs (McArthur and Siegel, 1983).

The matrix sampling assessment approach of NAAL minimized respondent burden by administering only a small number of literacy questions to each respondent. As a result, each respondent has too few items to produce an accurate scale score. The data are nonetheless able to support the estimation of literacy scores for the population and subpopulations using marginal maximum likelihood (MML) models (White and Dillow, 2005). NCES developed and made available a special software package for estimation of these models.[16] The NAAL survey team also defined four performance levels to make the abstract literacy scores more meaningful: "below basic," "basic," "intermediate," and "proficient" (White and Dillow, 2005) Table 6 lists these performance levels with the corresponding ranges of literacy scores, key abilities, and sample tasks for each level.

Differences in Mean Prose Scores by Self-Reported English-Ability

We use the MML model-based means to compare the prose proficiency of the NAAL's English-only speakers and LOTE speakers, with further comparisons by level of self-reported English ability. Figure 2 displays mean NAAL prose scores and 95 percent confidence intervals for various groups of NAAL respondents. Unsurprisingly, there is a statistical difference in mean prose scores between English-only speakers and LOTE speakers. On average, English-only speakers score 284 on the prose assessment, which indicates intermediate proficiency. LOTE speakers, in contrast, have an average score of 235, which indicates basic proficiency. English-only speakers thus have higher average prose literacy than LOTE speakers.

[16] AM Statistical Software, available at <http://am.air.org/naal.asp>.

Figure 2 also displays the variation in measured prose literacy among LOTE speakers by self-reported English ability. There is a clear trend in prose literacy among LOTE speakers. Those LOTE speakers who report speaking English "very well" have an average prose literacy score of 269, which falls in the intermediate performance level. In contrast, LOTE speakers who report speaking English "well" have an average score of 233, which puts them in the basic performance level. LOTE speakers reporting speaking English "not well" or "not at all" score 151 and 111, respectively, and both groups fall into the below basic performance level. The scores of all of these LOTE groups are statistically different from each other, and are also statistically different from the mean score of the English-only group.

These results suggest that the English-ability question captures variation in measured English literacy.[17] While it is clear that even LOTE speakers who report speaking English "very well" have lower literacy scores than English-only speakers, both groups fall, on average, into the intermediate performance level. As Table 6 shows, prose literacy at the intermediate performance level indicates abilities sufficient to read and understand moderately dense, less commonplace prose texts (White and Dillow, 2005). English speakers with intermediate proficiency are also able to summarize prose, make simple inferences, determine cause and effect, and recognize an author's purpose (White and Dillow, 2005). Thus, the LOTE speakers with the best self-reported English ability can perform the same key tasks as the average English-only speaker. LOTE speakers reporting an English ability of less than "very well," in contrast, have markedly lower language skills on average, limiting them to reading and understanding information in short, commonplace prose texts (White and Dillow, 2005).

[17] We repeated the analysis using MML means for prose scores by self-reported English ability for the other LOTE groups in the NAAL and found a similar pattern.

Distribution of Performance Levels

The differences between English-only speakers and LOTE speakers of varying self-reported levels are evident in the distribution of performance levels within different LOTE self-reported ability groups. Figure 3 displays the distribution of prose performance levels by LOTE status and self-reported English ability with 95 percent confidence intervals. Only 15 percent of English-only speakers scored at the proficient performance level on the NAAL prose assessment, while roughly 50 percent scored at the intermediate level. A quarter of English-only speakers scored at the basic performance level, and 9 percent were below basic (point-estimate differences statistically significant at $p < 0.05$). All of the distributions of performance levels among self-reported LOTE English-ability groups are statistically different from the distribution of performance levels among English-only speakers (all Rao-Scott χ^2 statistics significant at $p < 0.05$).

Nonetheless, the distribution of performance levels among LOTE speakers who report speaking English "very well" comes closest to the distribution of performance levels among English-only speakers. Approximately half (46 percent) of LOTE/"very well" speakers score in the intermediate proficiency level, a share not statistically different from the share among English-only speakers ($p > 0.05$). Higher proportions of LOTE/"very well" speakers scored in the basic (34 percent) performance level than English-only speakers, while the proportion falling into the proficient level was lower (8 percent).[18] Thus, LOTE speakers who speak English "very well" cluster more in lower performance levels than English-only speakers. Nonetheless, 64.9 percent of English-only speakers and close to 50 percent of LOTE/"very well" speakers fall into

[18] Differences statistically significant at $p < 0.05$.

the intermediate or proficient categories. According to Table 6, these respondents would thus possess the skills to engage in moderately challenging or more complex literary activities, such as consulting reference materials to determine which foods contain a particular vitamin or comparing viewpoints in two editorials.

There is a greater difference in distributions of performance levels between English-only speakers and LOTE speakers who report speaking English less than "very well" than between English-only speakers and LOTE speakers who report speaking English "very well." A plurality of LOTE speakers who report speaking English "well" fall into the basic performance level (42 percent), while fully 31 percent scored at the below-basic level. In contrast, a quarter of these LOTE speakers scored in the intermediate performance level, and only 2 percent in the proficient level. In contrast to the "very well" group, only 28 percent of LOTE speakers who speak English "well" score at intermediate or proficient performance levels (difference significant at $p < 0.05$). Thus, most LOTE speakers who report speaking English "well" have the literacy skills to perform only simple and everyday literacy activities, such as finding an explanation of how people were selected for a jury pool in a pamphlet for prospective jurors.

The performance-level distributions are even more skewed away from intermediate for the remaining self-reported English-ability levels, who are heavily concentrated in the "below basic" performance level. Eighty-six percent of LOTE speakers who report speaking English "not well" fall into the below basic performance level, and this lowest performance level captures 91 percent of LOTE speakers who report speaking English "not at all." Most of the remaining respondents in these two English-ability categories fall into the basic performance level (12 percent and 8 percent, respectively). These two groups of LOTE speakers thus have literacy

skills that, at most, permit only the most simple and concrete literacy tasks, such as searching a short, simple text to find out what a patient is allowed to drink before a medical test. At the very lowest levels of below-basic performance, the respondents are non-literate in English.

The comparisons of both mean prose scores and the distributions of performance levels show that NAAL LOTE speakers who report speaking English "very well," while they do not attain the same level of English literacy as English-only speakers, have an average literacy profile that allows them to complete the same set of literacy tasks as English-only speakers. These comparisons also demonstrate clear differences in objectively measured English ability between LOTE/"very well" speakers and LOTE speakers who report speaking English less than "very well," with the latter group having much more limited English-language prose-literacy skills.

Discussion and Conclusion

The "English-ability question" has been the Census Bureau's principal survey item for assessing the population's English proficiency since its appearance in the 1980 decennial census. This study looked at the English-ability item within the context of the 2003 NAAL. While the ACS lacks objective literacy data with which to perform a cross-validation of the English-ability question, the NAAL contains both self-rated English ability and multiple measures of English literacy. In the first part of the analysis, we compared the distributions of the NAAL and the 2003 ACS. While the two surveys differ for certain distributions, tests did not reveal statistical differences between some distributions. The second part of the analysis sought to compensate for the lack of identical filtering questions in the two surveys by identifying the

appropriate LOTE subsample in the NAAL. The demographic and English-ability distributions of the NAAL subsample that reported speaking a language other than English before school came the closest to the distributions of the ACS subsample that reported speaking a language other than English at home.

Our analysis of the NAAL prose literacy scores indicated that self-reported English ability of LOTE speakers differentiated identifiable levels of literacy, and that LOTE speakers who reported speaking English "very well" had the literacy profiles the least different from those of English-only speakers. A clear trend in mean literacy scores over the English-ability categories was evident: from "not at all" to "very well," each self-reported ability level scored statistically significantly higher on the prose literacy test than the adjacent ability group. LOTE speakers who reported speaking English "very well" scored on average in the intermediate performance level, while LOTE speakers with self-reported ability of less than "very well" had average scores at basic or below basic performance levels. The English-ability item thus captures significant differences in average prose literacy among LOTE speakers.

This study thus provides evidence that the English-ability item, as it appears in the ACS, may be a valid measure of English literacy, although additional research is needed. These results are consistent with evidence from the English Language Proficiency Study (ELPS) that compared respondents' self-assessments with literacy tests and found a high degree of correlation between the two (Kominski, 1989; Siegel et al., 2001). The NAAL results also echo findings using reinterview data from the 1980 decennial census (Siegel et al., 2001) and the 1986 content test (Kominski, 1989). In addition, these results also provide some guidance

regarding average literacy levels associated with different responses to the ACS English-ability question.

Future research should delve more deeply into the NAAL data to examine the associations between the other kinds of literacy (document and quantitative) and self-reported English ability to see if the association holds. In addition, future analyses could adopt a regression-modeling framework to introduce potentially important demographic covariates, such as place of birth and educational attainment.

References

Baldi, Stéphane (Ed.), Mark Kutner, Elizabeth Greenberg, Ying Jin, Justin Baer Elizabeth Moore, Eric Dunleavy, Martha Berlin, Leyla Mohadjer, Greg Binzer, Thomas Krenzke, Jacqueline Hogan, Michelle Amsbary, Barbara Forsyth, Lyn Clark, Terri Annis, and Jared Bernstein. (2009). *Technical Report and Data File User's Manual for the 2003 National Assessment of Adult Literacy* (NCES 2009-476). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Kominski, Robert. (1989). "How Good is 'How Well'? An Examination of the Census English Speaking Ability Question." Presented at the Annual Meeting of the American Statistical Association. August 6-11, Washington, D.C.

Kutner, Mark, Elizabeth Greenberg, Ying Jin, Bridge Boyle, Yung-chen Hsu, and Eric Dunleavy. (2007). *Literacy in Everyday Life: Results From the 2003 National Assessment of Adult Literacy* (NCES 2007 -480). U.S. Department of Education. Washington, D.C.: National Center for Education Statistics.

McArthur, Edith K. and Paul M. Siegel. (1983). "Developments in the Measurement of English Language Proficiency." American Statistical Association, *Proceedings of the Social Statistics Section*: 373-378.

National Research Council. (2011). *Allocating Federal Funds for State Programs for English Language Learners*.Washington, DC: The National Academies Press.

Särndal, Carl-Erik, Bengt Swensson, and Jan Wretman. (1992). *Model Assisted Survey Sampling*. New York: Springer.

Siegel, Paul, Elizabeth Martin, and Rosalind Bruno. (2001). "Language Use and Linguistic Isolation: Historical Data and Methodological Issues." Presented at the FCSM Statistical Policy Seminar, Bethesda, MD, November 8-9, 2000.

U.S. Department of Education. Office of Planning, Budget and Evaluation. (1987). "Numbers of Limited English Proficient Children: National, State, and Language-Specific Estimates Based on the 1982 English Language Proficiency Survey and Special Tabulations of the 1980 Census." April. Mimeo.

U.S. Department of Education. National Center for Education Statistics. (2001). *Technical Report and Data File User's Manual For the 1992 National Adult Literacy Survey*, NCES 2001–457, by Irwin Kirsch, Kentaro Yamamoto, Norma Norris, Donald Rock, Ann Jungeblut, Patricia O'Reilly, Martha Berlin, Leyla Mohadjer, Joseph Waksberg, Huseyin Goksel, John Burke, Susan Rieger, James Green, Merle Klein, Anne Campbell, Lynn Jenkins, Andrew

Kolstad, Peter Mosenthal, and Stéphane Baldi. Project Officer: Andrew Kolstad. Washington DC: 2001.

White, Sheida and Sally Dillow. (2005). *Key Concepts and Features of the 2003 National Assessment of Adult Literacy* (NCES 2006-471).U.S.Department of Education.Washington, DC: National Center for Education Statistics.

Tables

Table 1: Percentage distributions of selected demographic characteristics, NAAL and ACS

Survey	Total		Sex						Region										Place of birth					
			Male		Female				Northeast		Midwest		South		West				U.S.		Abroad			
	%	se	%	se	%	se	χ^2	p	%	se	%	se	%	se	%	se	χ^2	p	%	se	%	se	χ^2	p
NAAL 2003			**48.6**	**0.49**	**51.4**	**0.49**	*0.00*	*0.97*	**19.3**	**1.47**	**22.8**	**1.11**	**36.1**	**1.57**	**21.8**	**0.90**	*0.50*	*0.92*	**85.8**	**0.90**	**14.2**	**0.90**	*2.38*	*0.12*
Age																								
16-18	**6.1***	0.29	52.3	2.35	47.7	2.35	*0.00*	*1.00*	17.2	2.01	22.9	2.27	36.8	2.69	23.2	2.42	*0.09*	*0.99*	89.6	1.25	10.4	1.25	*0.51*	*0.48*
19-24	**10.6**	0.37	51.7	1.64	48.3	1.64	*0.00*	*0.99*	18.0	1.59	21.1	1.47	38.2	2.18	22.7	1.72	*2.43*	*0.49*	83.5	1.41	16.5	1.41	*1.99*	*0.16*
25-39	**27.3**	0.45	49.4	1.02	50.6	1.02	*0.00*	*1.00*	18.1	1.70	22.9	1.4	36.1	1.67	22.9	1.29	*0.83*	*0.84*	80.1	1.13	19.9	1.13	*0.63*	*0.43*
40-49	**19.9**	0.48	47.3	1.10	52.7	1.10	*0.00*	*0.98*	19.3	1.57	22.60	1.37	34.6	1.8	23.5	1.58	*0.36*	*0.95*	85.4	1.27	14.6	1.27	*1.58*	*0.21*
50-64	**20.9**	0.43	47.4	1.12	52.6	1.12	*0.00*	*0.99*	21.4	1.77	23.0	1.58	35.3	2.01	20.2	1.18	*2.07*	*0.56*	89.1*	0.97	10.9*	0.97	*7.69*	*0.01*
65+	**15.1**	0.57	44.9*	1.06	55.1*	1.06	*0.00*	*0.98*	20.2	2.21	24.3	2.09	36.7	2.42	18.7	1.44	*1.20*	*0.75*	92.1*	0.93	7.9*	0.93	*14.76*	*0.00*
χ^2	*10.32*																							
p	*0.07*																							
ACS 2003			**48.3**	**0.01**	**51.7**	**0.01**			**19.0**	**0.01**	**22.5**	**0.01**	**35.8**	**0.01**	**22.7**	**0.01**			**84.4**	**0.06**	**15.6**	**0.06**		
Age																								
16-18	**5.3**	0.02	51.6	0.18	48.4	0.18			17.5	0.14	23.0	0.15	36.0	0.18	23.5	0.16			90.5	0.17	9.5	0.17		
19-24	**10.2**	0.02	50.4	0.08	49.6	0.08			16.8	0.07	22.8	0.06	36.2	0.08	24.1	0.08			85.5	0.16	14.5	0.16		
25-39	**27.4**	0.03	49.6	0.05	50.4	0.05			18.5	0.04	21.7	0.05	36.0	0.06	23.8	0.06			79.2	0.11	20.8	0.11		
40-49	**20.3**	0.03	49.0	0.06	51.0	0.06			19.3	0.05	22.9	0.06	35.2	0.07	22.6	0.07			83.8	0.10	16.2	0.10		
50-64	**21.3**	0.02	48.2	0.03	51.8	0.03			19.6	0.03	22.7	0.02	35.8	0.04	21.9	0.03			86.4	0.08	13.6	0.08		
65+	**15.5**	0.01	42.4	0.03	57.6	0.03			20.4	0.02	22.9	0.02	36.0	0.03	20.6	0.02			88.5	0.08	11.5	0.08		

Universe: population aged 16 and older.

Notes: * = NAAL estimate statistically different from corresponding ACS estimate at $p < .05$. "se" = standard error. χ^2 = Rao-Scott adjusted chi-squared comparing NAAL (observed) to ACS (expected) distribution, p = p value of χ^2 with df = number of categories - 1

Source: The 2003 American Community Survey (ACS) and the 2003 National Assessment of Adult Literacy (NAAL).

Table 2: Survey questions measuring speaking a language other than English, NAAL and ACS

Survey	Question	Variable	Dichotomous indicator		Alias
			English only	LOTE	
NAAL	When you were growing up, what language or languages were usually spoken in your home?	DHMLANG	1 = English	2 = Other (LOTE)	Growing up
	What language or languages did you learn to speak before you started school?	D1STLAN	1 = English	2 = Other (LOTE)	Before school
	What language did you first learn to read and write?	DLANGRW	1 = English	2 = Other (LOTE)	First read/write
	How old were you when you learned to speak English?	DENGAGE	1 = Always spoke English only	2 = Learned English at any age (LOTE)	Age learned English
	Which language do you usually speak now?	DCLANGS	1 = English	2 = Other (LOTE)	Language speak now
ACS	Does this person speak a language other than English at home?	LANX	2 = No	1 = Yes (LOTE)	-

Notes: "LOTE" = "Language other than English". "Alias" = name used in subsequent tables to refer to LOTE indicator.

Source: The 2003 American Community Survey (ACS) and the 2003 National Assessment of Adult Literacy (NAAL).

Table 3: Survey questions measuring English-speaking ability, NAAL and ACS

Survey	Question	Response categories	Variable
NAAL	With regard to the English language, how well do you…		
	...Understand it when it is spoken to you?	Very well, well, not well, not at all	DBQ1130
	...Speak it?	Very well, well, not well, not at all	DBQ1135
	...Read it?	Very well, well, not well, not at all	DBQ1140
	...Write it?	Very well, well, not well, not at all	DBQ1145
ACS	How well does this person speak English?	Very well, well, not well, not at all	ENG

Source: The 2003 American Community Survey (ACS) and the 2003 National Assessment of Adult Literacy (NAAL).

Table 4: Percentage distributions of demographic characteristics for measures of speaking a language other than English, NAAL and ACS

	NAAL																		ACS			
	Language growing up				*Language before school*				*Language first read / write*				*Age learned English* [1]				*Language speak now*					
	English only		LOTE		English only		LOTE		English only		LOTE		English only		LOTE		English only		LOTE		English only		LOTE	
	% or χ^2	se or *p*	% or χ^2	se or *p*	% or χ^2	se or *p*	% or χ^2	se or *p*	% or χ^2	se or *p*	% or χ^2	se or *p*	% or χ^2	se or *p*	% or χ^2	se or *p*	% or χ^2	se or *p*	% or χ^2	se or *p*	%	se	%	se
Sex																								
Female	52.10	0.57	50.20	0.94	52.20	0.56	49.45	0.95	51.87	0.53	47.80	1.46	51.77	0.90	50.12	0.59	51.37	0.51	51.72	1.81	52.02	0.02	50.46	0.09
Male	47.90	0.57	49.80	0.94	47.80	0.56	50.55	0.95	48.13	0.53	52.20	1.46	48.23	0.90	49.88	0.59	48.63	0.51	48.28	1.81	47.98	0.02	49.54	0.09
χ2, p	*0.05*	*0.82*	*0.13*	*0.72*	*0.13*	*0.71*	*1.21*	*0.27*	*0.06*	*0.80*	*3.49*	*0.06*	*0.09*	*0.76*	*0.25*	*0.62*	*1.54*	*0.21*	*0.45*	*0.50*	-	-	-	-
Place of birth																								
U.S.	97.70 *	0.24	45.90 *	1.89	97.60 *	0.26	35.60 *	1.91	96.19	0.29	8.10 *	1.11	97.90 *	0.23	47.20 *	1.85	92.20 *	0.46	10.00 *	1.40	96.25	0.03	31.62	0.23
Other	2.30 *	0.24	54.10 *	1.89	2.40 *	0.26	64.40 *	1.91	3.81	0.29	91.90 *	1.11	2.10 *	0.23	52.80 *	1.85	7.80 *	0.46	90.00 *	1.40	3.75	0.03	68.38	0.23
χ2, p	*39.12*	*0.00*	*56.37*	*0.00*	*27.77*	*0.00*	*4.40*	*0.04*	*0.00*	*0.98*	*430.73*	*0.00*	*52.42*	*0.00*	*70.40*	*0.00*	*74.84*	*0.00*	*232.62*	*0.00*	-	-	-	-
Region																								
Northeast	17.40	1.45	25.50	2.76	18.00	1.42	24.80	2.64	18.70	1.41	23.70	2.78	17.50	1.46	24.90	2.62	19.30	1.45	18.50	2.80	18.56	0.03	20.83	0.12
Midwest	25.80	1.37	13.00	1.17	25.70	1.34	10.90	1.08	24.60	1.26	9.50	1.22	25.90	1.36	13.10	1.15	24.10	1.20	8.00 *	1.26	24.91	0.03	11.91	0.17
South	38.10	1.83	29.00	3.21	37.40	1.80	30.40	3.41	36.70	1.71	31.50	4.00	38.10	1.84	29.50	3.06	36.10	1.70	35.60	5.06	37.04	0.04	30.45	0.17
West	18.60	1.06	32.50	2.62	19.00	1.04	33.90	2.84	20.00	0.90	35.30	3.39	18.50	1.07	32.50	2.54	20.50	0.91	38.00	4.30	19.48	0.04	36.81	0.17
χ2, p	*1.64*	*0.65*	*5.16*	*0.16*	*0.58*	*0.90*	*3.12*	*0.37*	*0.20*	*0.98*	*2.20*	*0.53*	*1.67*	*0.64*	*4.73*	*0.19*	*1.29*	*0.73*	*3.93*	*0.27*	-	-	-	-
Age																								
16-18	6.20 *	0.32	6.10	0.52	6.20 *	0.32	6.10	0.53	6.40 *	0.31	4.60 *	0.51	6.10 *	0.34	6.20	0.51	6.20 *	0.31	5.10	0.70	5.23	0.02	5.66	0.06
19-24	10.10	0.40	12.50	0.71	10.10	0.39	13.10	0.76	10.30	0.37	13.50	0.92	10.00	0.40	12.50	0.67	10.40	0.38	13.80	1.10	9.71	0.02	12.39	0.09
25-39	26.20	0.54	31.20 *	0.80	26.10	0.50	32.60 *	0.97	26.00	0.47	37.30	1.46	26.30	0.54	30.70 *	0.80	26.30	0.49	39.30 *	1.75	25.61	0.04	35.12	0.13
40-49	20.00	0.57	19.40	0.68	20.00	0.55	19.30	0.67	19.90	0.55	20.10	0.98	20.00	0.56	19.70	0.64	20.00	0.52	18.90	1.03	20.60	0.03	19.03	0.11
50-64	22.00	0.52	17.20	0.86	21.90	0.51	16.40	0.81	21.60	0.48	15.70	0.90	22.00	0.52	17.30	0.86	21.40	0.47	14.80	1.10	22.30	0.02	16.77	0.10
65+	15.50	0.64	13.60 *	0.93	15.70	0.63	12.50	0.80	15.90	0.64	8.80 *	0.91	15.60	0.64	13.50 *	0.91	15.70	0.61	8.10	1.23	16.54	0.02	11.03	0.07
χ2, p	*44.37*	*0.00*	*20.97*	*0.00*	*24.62*	*0.00*	*9.28*	*0.10*	*48.55*	*0.00*	*14.30*	*0.01*	*39.07*	*0.00*	*24.42*	*0.00*	*75.71*	*0.00*	*15.84*	*0.01*	-	-	-	-
Overall	77.00 *	1.24	23.00 *	1.24	80.90	1.10	19.10	1.10	88.30 *	0.82	11.70 *	0.82	76.20 *	1.24	23.80 *	1.24	92.30 *	0.71	7.70 *	0.71	81.63	0.06	18.37	0.06
χ2, p	*13.89*	*0.00*			*0.43*	*0.51*			*65.86*	*0.00*			*19.10*	*0.00*			*224.28*	*0.00*			-			
Weighted N	165,192,811		49,324,955		173,595,339		40,888,122		189,173,453		25,213,809		163,381,610		51,066,416		197,910,188		16,612,752		178,154,969		40,101,242	
Unweighted N	19,252				19,249				19,237				19,246				19,253				1,039,381			

Universe: population aged 16 and older.

Notes: * = NAAL estimate statistically different from corresponding ACS estimate at $p < .05$. 1: In this category, "English only" means the respondent only ever spoke English, and "LOTE" means that the respondent learned English at some age. "se" = standard error. χ^2 = Rao-Scott adjusted chi-squared comparing NAAL (observed) to ACS (expected) distribution, p = p value of χ^2 with df = number of categories - 1. "LOTE" = "Language other than English".

Source: The 2003 American Community Survey (ACS) and the 2003 National Assessment of Adult Literacy (NAAL).

Table 5: Percentage distributions of English ability for measures of speaking a language other than English, NAAL and ACS

	NAAL												***ACS***	
	Language growing up				*Language before school*				*Language first read / write*		*Age learned English* [1]		*Language speak now*					
	English only		LOTE		English only		LOTE		English only		LOTE		English only		LOTE		LOTE	
English ability	%	se	%	se	%	se	%	se	%	se	%	se	%	se	%	se	%	se	%	se
Very well	82.80 *	0.94	57.20 *	1.50	82.90 *	0.95	51.30	1.60	83.20 *	0.91	29.40 *	1.57	82.70 *	0.94	58.20 *	1.50	82.20 *	0.88	13.40 *	1.19	51.36	0.21
Well	16.70 *	0.94	21.20	0.98	16.70 *	0.96	22.80 *	0.97	16.20 *	0.91	29.20 *	1.51	16.80 *	0.94	20.90	0.96	17.10 *	0.88	25.40 *	1.67	20.44	0.14
Not well	0.50 *	0.06	13.90 *	0.92	0.50 *	0.07	16.50 *	1.01	0.50 *	0.06	26.60 *	1.29	0.50 *	0.06	13.40 *	0.90	0.60 *	0.07	38.50 *	1.47	18.94	0.16
Not at all	0.10 *	0.03	7.60	0.85	0.10 *	0.03	9.30	0.97	0.10 *	0.03	14.70 *	1.36	0.10 *	0.03	7.50 *	0.83	0.10 *	0.03	22.70 *	1.72	9.27	0.14
$\chi 2$	*2149.84*		*32.07*		*2082.70*		*6.88*		*2313.39*		*129.75*		*2142.82*		*40.95*		*2367.85*		*346.82*		-	-
p	*0.00*		*0.00*		*0.00*		*0.08*		*0.00*		*0.00*		*0.00*		*0.00*		*0.00*		*0.00*		-	-

Universe: population aged 16 and older.

Notes: * = NAAL estimate statistically different from corresponding ACS estimate at $p < .05$. 1: In this category, "English only" means the respondent only ever spoke English, and "LOTE" means that the respondent learned English at some age. "se" = standard error. χ^2 = Rao-Scott adjusted chi-squared comparing NAAL (observed) to ACS (expected) distribution, p = p value of χ^2 with df = number of categories - 1. "LOTE" = "Language other than English".

Source: The 2003 American Community Survey (ACS) and the 2003 National Assessment of Adult Literacy (NAAL).

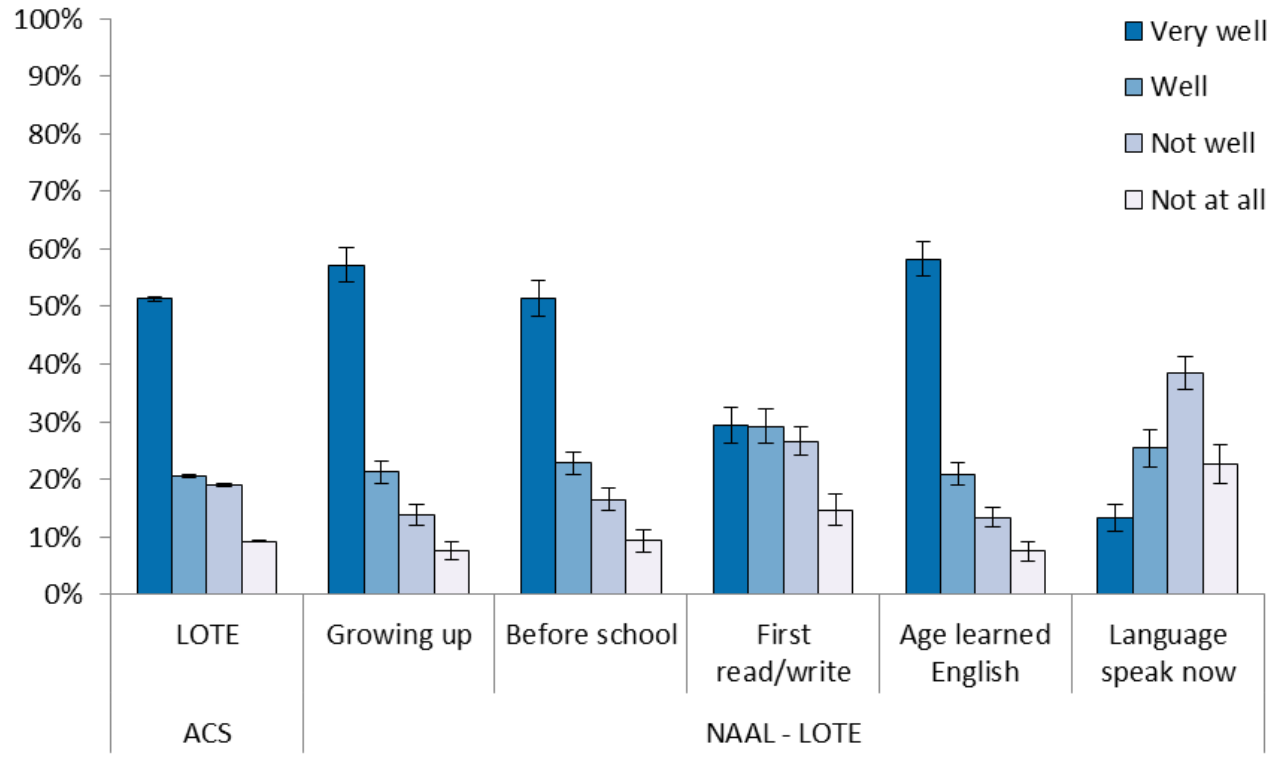
Table 6: Descriptions of Prose Proficiency Levels, National Assessment of Adult Literacy (NAAL)

Prose score range	Level and definition	Definition	Key abilities associated with level	Sample prose task typical of level
0-209	Below Basic	no more than the most simple and concrete literacy skills	adults at the Below Basic level range from being nonliterate in English to being able to locate easily identifiable information in short, commonplace prose texts	searching a short, simple text to find out what a patient is allowed to drink before a medical test
210-264	Basic	skills necessary to perform simple and everyday literacy activities	reading and understanding information in short, commonplace prose texts	finding in a pamphlet for prospective jurors an explanation of how people were selected
265-339	Intermediate	skills necessary to perform moderately challenging literacy activities	reading and understanding moderately dense, less commonplace prose texts as well as summarizing, making simple inferences, determining cause and effect, and recognizing the author's purpose	consulting reference materials to determine which foods contain a particular vitamin
339-500	Proficient	skills necessary to perform more complex and challenging literacy activities	reading lengthy, complex, abstract prose texts as well as synthesizing information and making complex inferences	comparing viewpoints in two editorials

Source: Adapted from White and Dillow (2005).

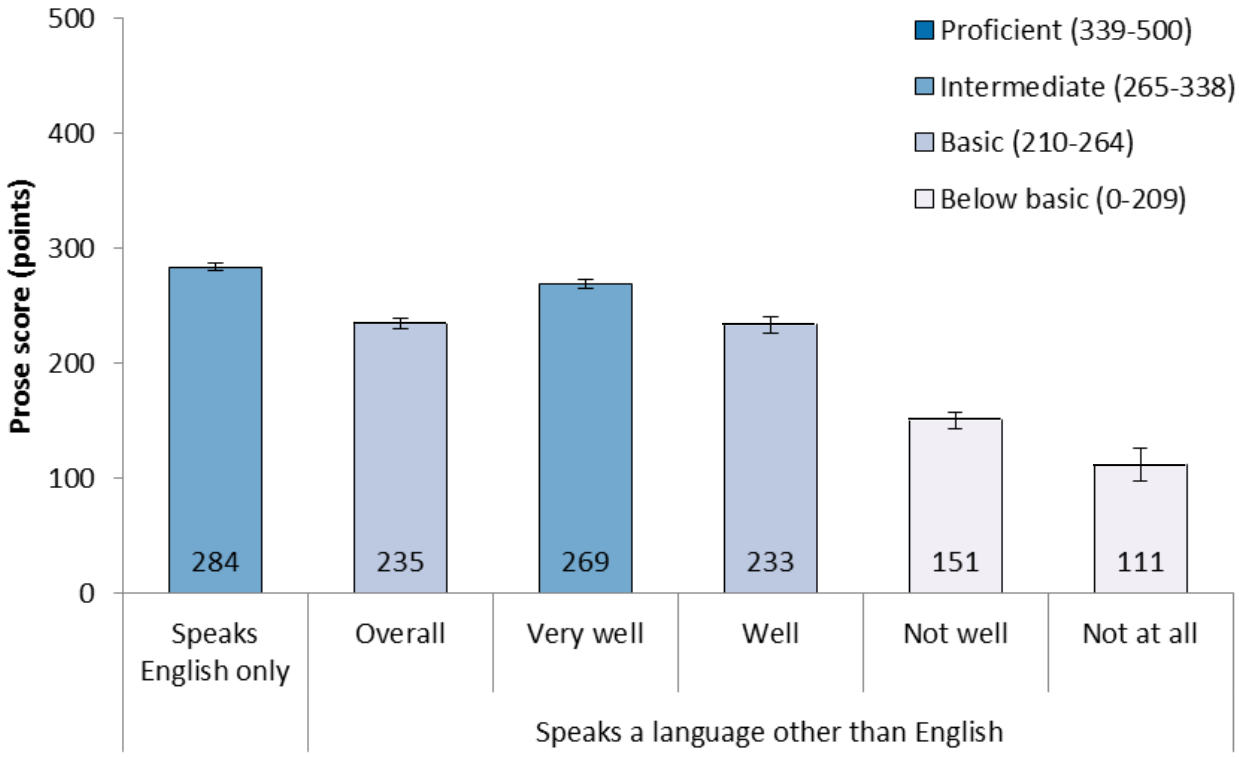
Figures

Figure 1: Distribution of self-reported English ability for speakers of languages other than English by measure of speaking a language other than English, with 95 percent confidence intervals



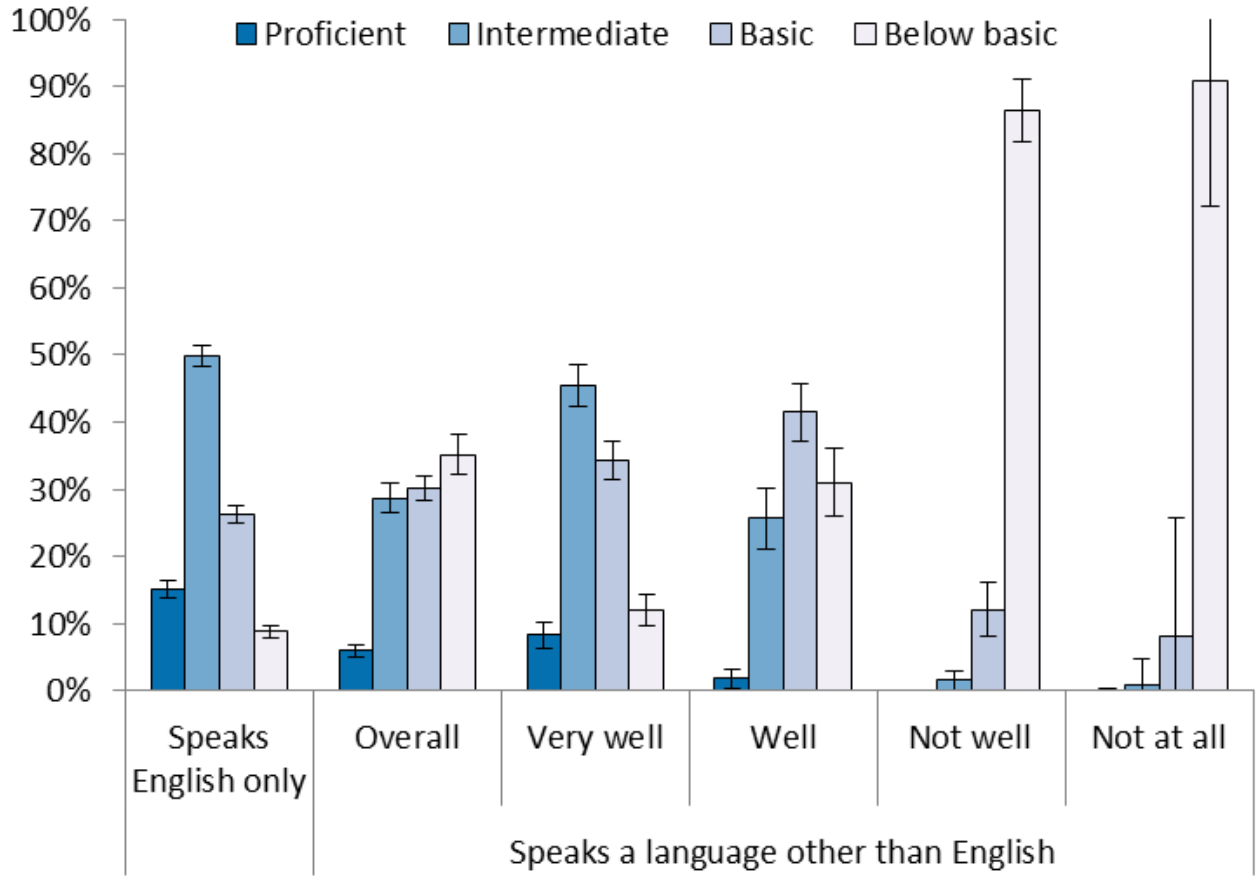
Universe: population aged 16 and older.
Notes: "LOTE" = "Language other than English"
Source: The 2003 American Community Survey (ACS) and the 2003 National Assessment of Adult Literacy (NAAL).

Figure 2: Mean NAAL prose scores by language-use category and self-reported ability, with 95 percent confidence intervals



Universe: population aged 16 and older.
Source: The 2003 National Assessment of Adult Literacy (NAAL).

Figure 3: Distribution of prose proficiency levels by language-use category and self-reported English ability, with 95 percent confidence intervals



Universe: population aged 16 and older.
Source: The 2003 National Assessment of Adult Literacy (NAAL).