

# *Understanding the Basic Reading Skills of U.S. Adults:*

## *Reading Components in the PIAAC Literacy Survey*

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# Introduction

- To read fluently, with understanding—to be able to learn from text—is perhaps most important foundational skill to
  - health,
  - well-being, and
  - social and economic advancement.
- Of even greater importance with the emergence of the Internet and social networking
  - accessible library of the world's knowledge,
  - ability to communicate with friends, family, and employers.

# Problem

- PIAAC survey paints troubling portrait of literacy skills in the United States.
  - Skills have remained relatively unchanged in the decade since previous report
  - At same time, other countries have been showing improvements
- Most recent PIAAC Literacy international (US) estimates
  - Below Level 1: ~ 3.3% (3.9% US)
  - Level 1: ~ 12.2% (13.6% US)
- In previous surveys, we could not estimate what literacy tasks adults Below Level 1 could do successfully, if any.

Source: OECD, *Time for the U.S. to Reskill? What the Survey of Adult Skills Says* (Paris: OECD Publishing, 2013), [http://skills.oecd.org/Survey\\_of\\_Adult\\_Skills\\_US.pdf](http://skills.oecd.org/Survey_of_Adult_Skills_US.pdf).

# Reading Components

Purpose and Design

# Reading Components (RC)

- **Goal:** What skills do adults at and below level possess? What reading tasks can they do?
- RCs are considered part of the general Literacy Framework,
  - but because of design considerations, not included as continuous part of the proficiency scale.
- First time ever in international adult survey

# Reading Components

- “Components” refers to the sub-skills that underlie reading
- In PIAAC, 3 components were measured:
  - **Word Meaning**: picture - word matching
  - **Sentence Processing**: reading a sentence and judging its “sensibility”
  - **Passage Comprehension**: fill-in-the-blank items embedded in a passage

**Sources:** OECD, 2012, Literacy, Numeracy, or PIAAC Literacy Expert Group, PIAAC Literacy: A Conceptual Framework, OECD Education Working Papers No. 34 (Paris: OECD Publishing, 2009),

Sabatini & Bruce, PIAAC Reading Components: A Conceptual Framework, OECD Education Working Paper No. 33 (Paris: OECD Publishing, 2009).

# Reading Components Design

## **Guiding Principles in Component Design**

- Skilled reading literacy is built on a foundation of how one's language and writing system work together
- Assesses knowledge and skill of printed text, not language skill
- Efficiency and integration of component skills is indicative of proficiency

# Reading Components Design

## Assumptions

- Adults sampled are at low end of literacy ability spectrum.
  - Items are intentionally easy to moderate difficulty
- Item sets reflect linguistic characteristics of the language of assessment.
  - Maintain relatively easy items after translation



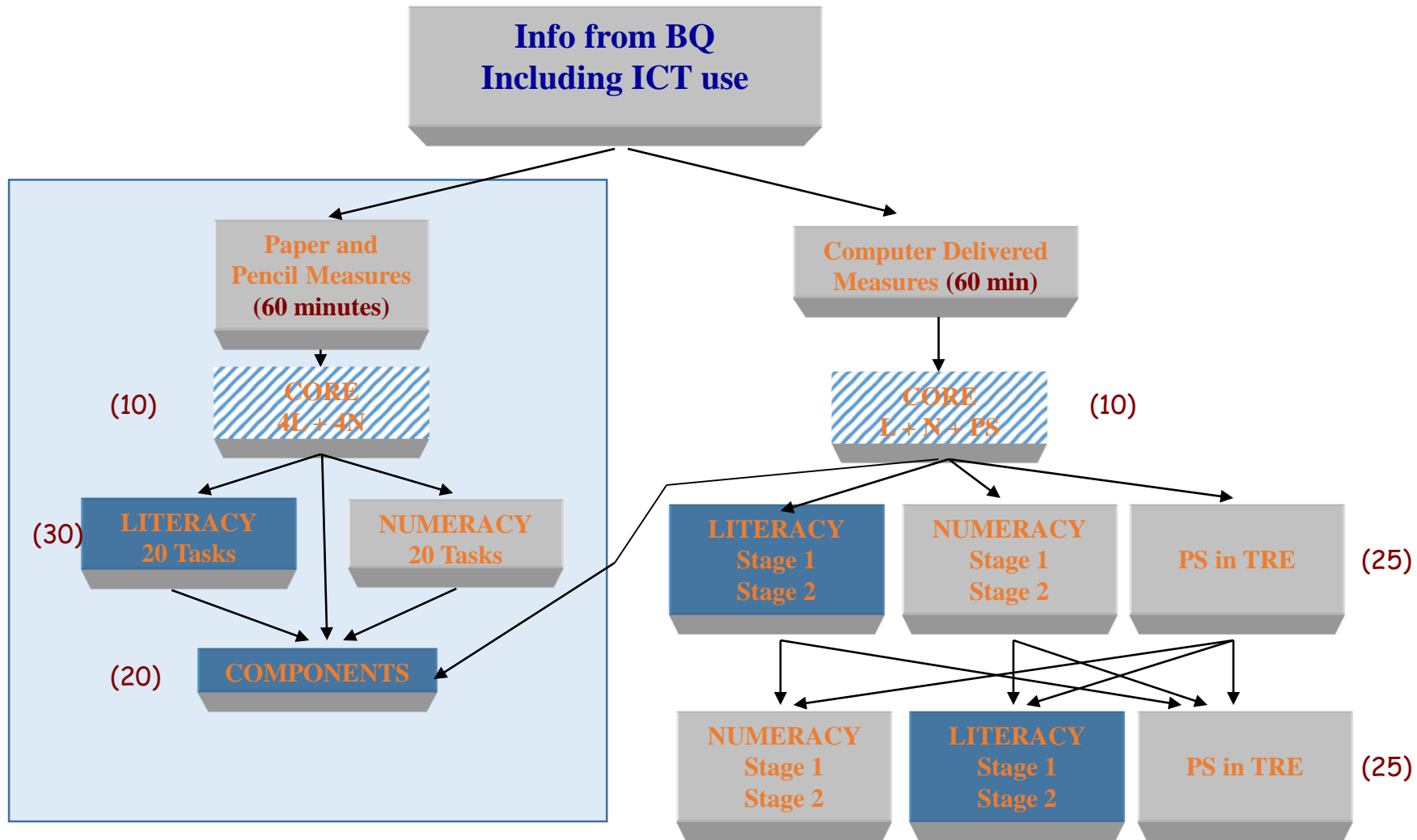
# Reading Components

- Other important ideas to consider:
  - In skilled reading, component skills are integrated during typical reading performance
  - Even during development, component skills do not develop strictly hierarchically
  - Nonetheless, they can be separately measured.

# Methods

Design, Sample, Instruments

# PIAAC Assessment Design



# Study Sample by Routes

Group	Core Task Performance	Assessments Blocks Administered	% of Full Sample	% of PBA Subsample
No Computer Experience	Pass	Literacy or Numeracy Block & RC	9.3	35%
Some Computer Experience, but Opted out of CBA	Pass	Literacy or Numeracy Block & RC	10.2	38%
Some Computer Experience, but Failed CBA core	Pass	Literacy or Numeracy Block & RC	4.9	18%
Passed CBA core, but then Failed Core	Fail	RC only	0.6	2%
Failed PBA core	Fail	RC only	1.8	7%
<b>Total Taking PBA</b>			<b>26.8</b>	<b>100%</b>

# Rationale and Sample for this Study

**Goal:** understanding the United States adult population.

- Chose English speaking countries
  - (United States, Canada, United Kingdom, and Ireland)
  
- English only **assures that difference in performance** levels of groups are reflective of differences in
  - **population** or **educational opportunities**,
  - **not** differences in the relative difficulty of learning to read in the particular language.
  - For Canada, included only English language tests.
  
- Note, still include nonnative English speaker subpopulations
  - Size of NNES will impact overall size of country differences

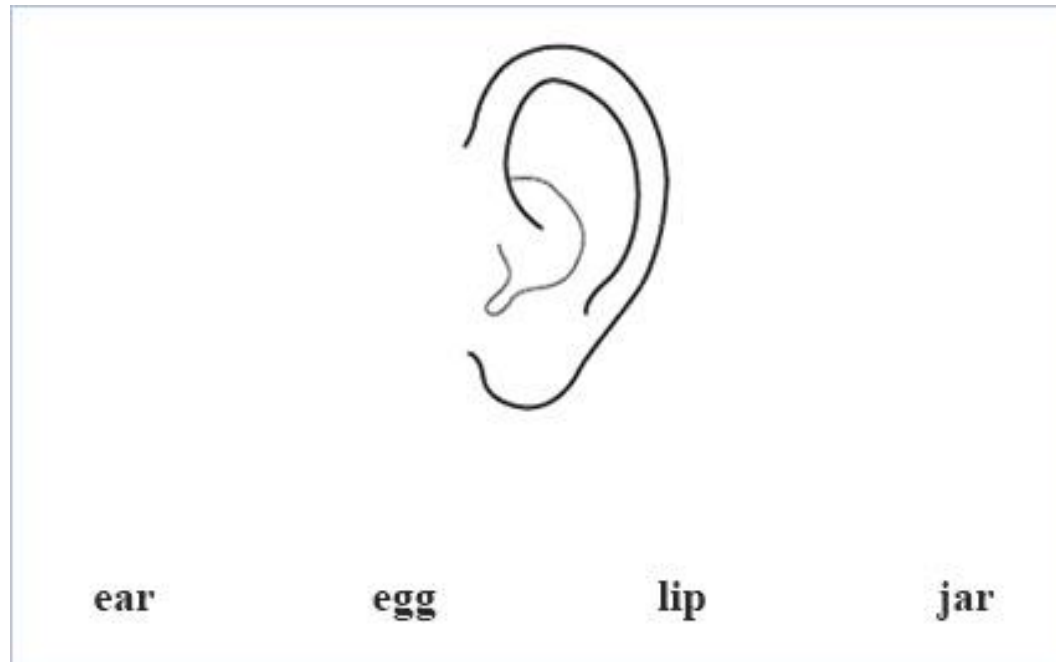
# Rationale and Sample for this Study

- Also included Italy and Spain
  - Italian and Spanish have highly regular sight-to-sound correspondences, which, all things being equal,
    - should make it easier to learn to read in these languages.
  - On the other hand, Italy and Spain had relatively low performance levels.
    - Opportunity to investigate hypothesis that it is relatively easier to learn to read in these languages.

# Reading Components Tasks

## Picture Vocabulary (PV)

- Targets foundation words in language and writing system.
- Simple, concrete nouns.
- Native language speakers will know aural sound of word.



# Reading Components Tasks

## Sentence processing (SP)

- Targets evaluation of relations and truth value of sentence claims.
- One should not believe everything one reads!
- Field test demonstrated validity of selected items.

<b>Three girls ate the song.</b>	<b>YES</b>	<b>NO</b>
<b>The man drove the green car.</b>	<b>YES</b>	<b>NO</b>
<b>The lightest balloon floated in the bright sky.</b>	<b>YES</b>	<b>NO</b>
<b>A comfortable pillow is soft and rocky.</b>	<b>YES</b>	<b>NO</b>
<b>A person who is twenty years old is older than a person who is thirty years old.</b>	<b>YES</b>	<b>NO</b>



# Reading Components Tasks

## Passage Comprehension (PC)

- Targets gist understanding of continuous texts on general topics.
- Same general difficulty as easy sentence task items.

To the editor: Yesterday, it was announced that the cost of riding the bus will increase. The price will go up by twenty percent starting next wife / month. As someone who rides the bus every day, I am upset by this foot / increase. I understand that the cost of gasoline / student has risen. I also understand that riders have to pay a fair price / snake for bus service. I am willing to pay a little more because I rely on the bus to get to object / work. But an increase / uncle of twenty percent is too much.

This increase is especially difficult to accept when you see the city's plans to build a new sports stadium. The government will spend millions on this project even though we already have a science / stadium. If we delay the stadium, some of that money can be used to offset the increase in bus fares / views. Then, in a few years, we can decide if we really do need a new sports cloth / arena. Please let the city council know you care about this issue by attending the next public meeting / frames.

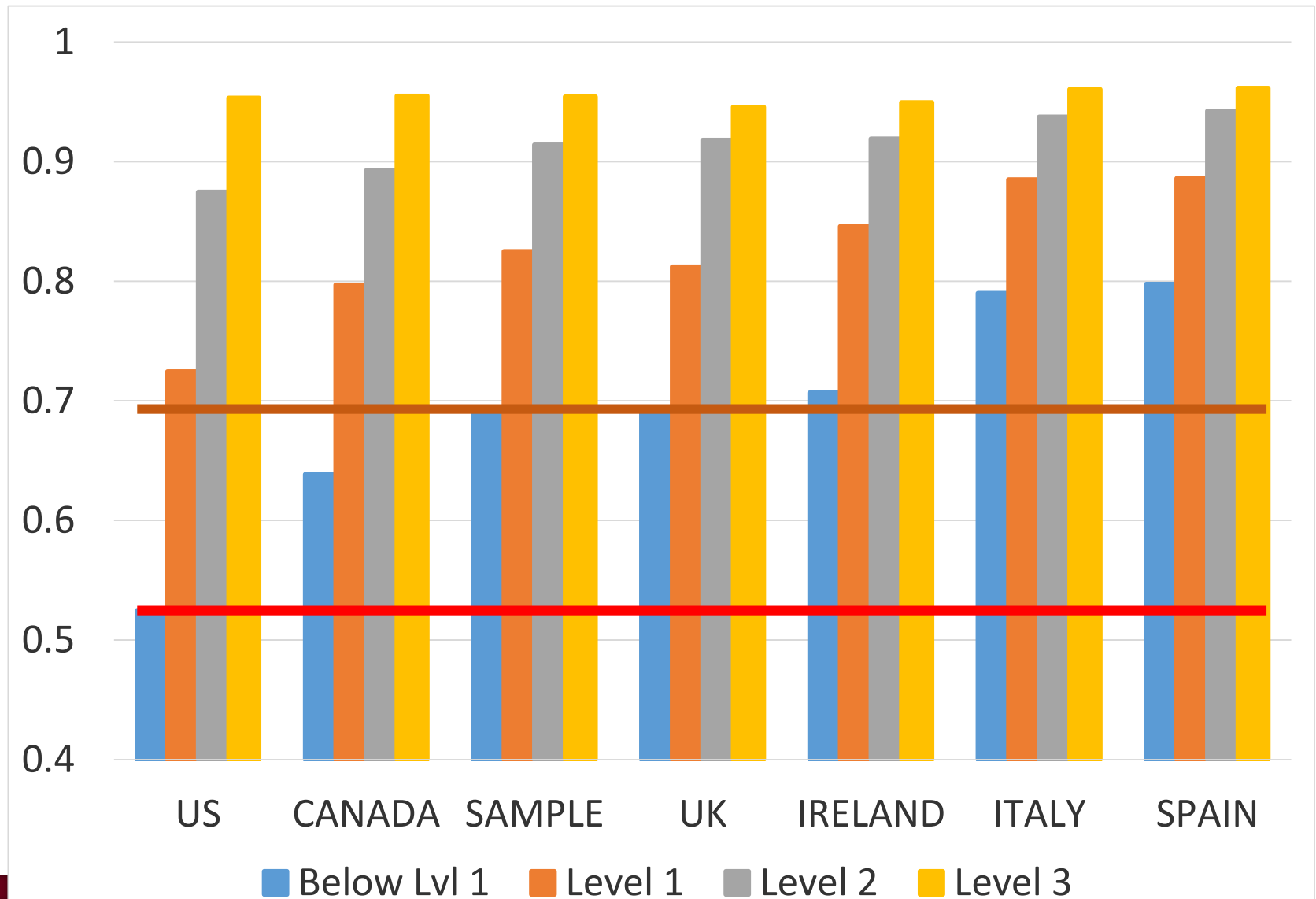
Figure 3. Sample passage comprehension items.

# Component Task Set Details

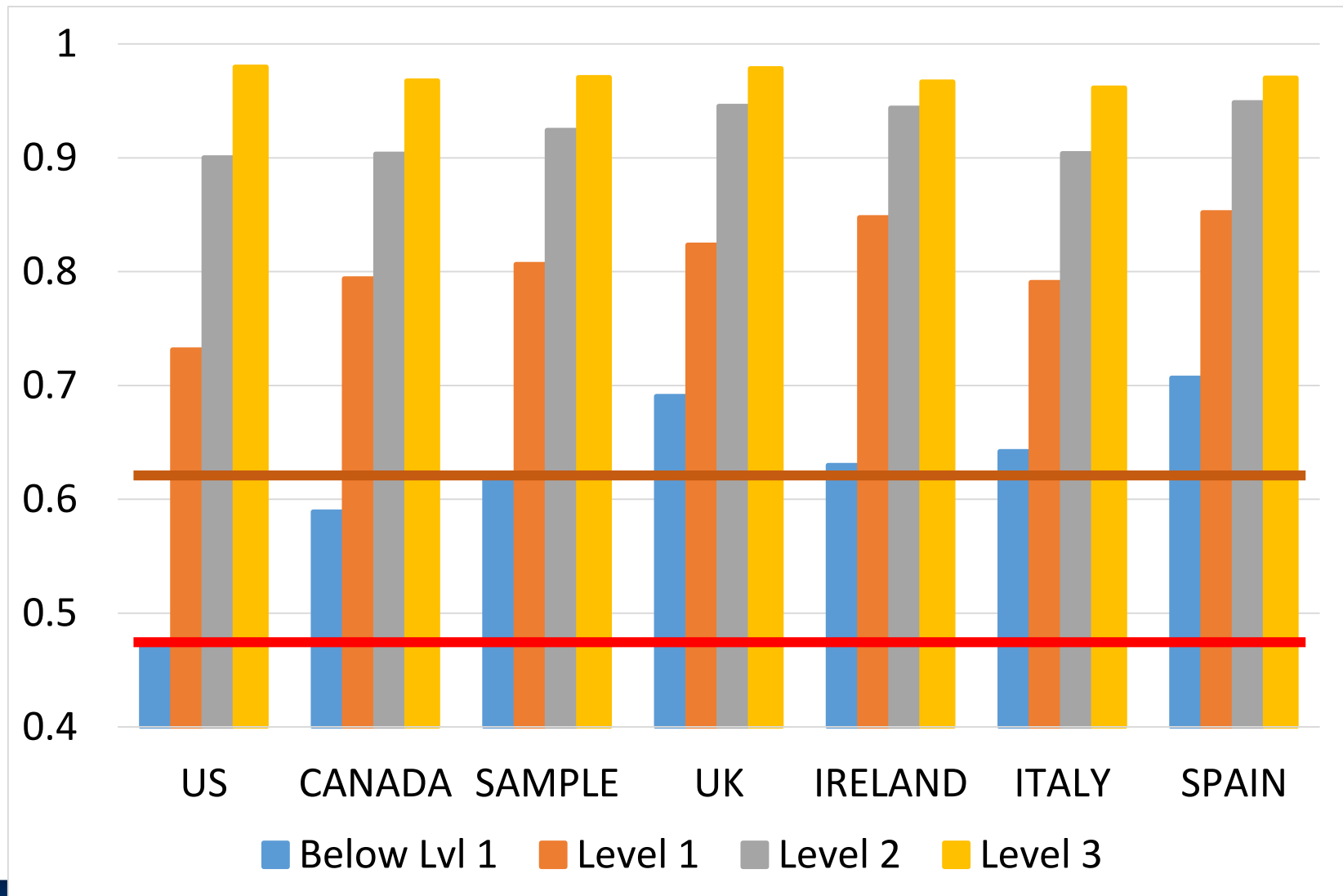
Reading Component	Total Items per Set	No. of Choices per item	Chance Level Total Score	Chance Level Percentage Correct
Print Vocabulary	34	4	8-9	24-26%
Sentence Processing	22	2	11	50%
Passage Comprehension	44	2	22	50%
Total (Sum) All Items	100	2 or 4	41-42	41-42%

# Results

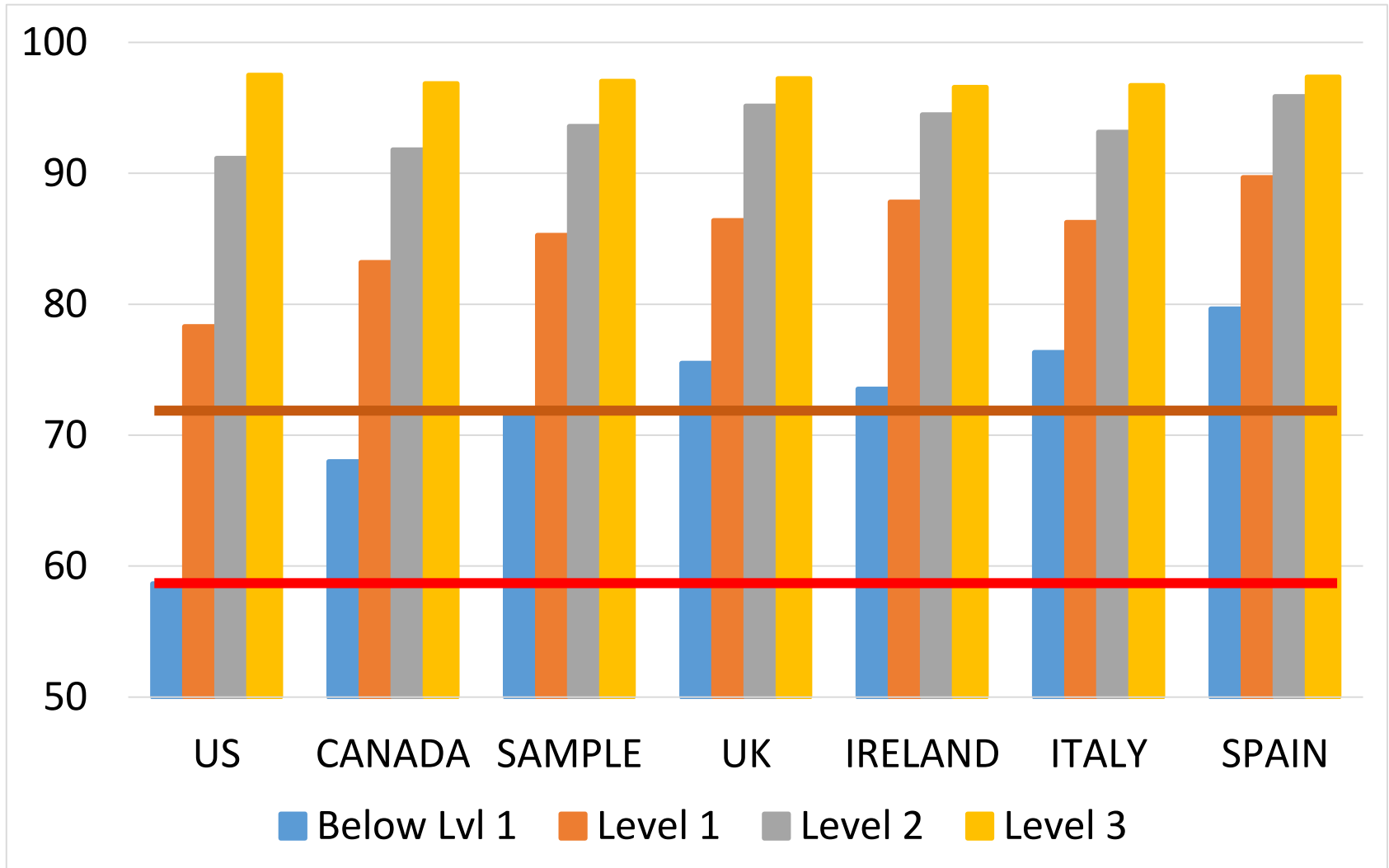
# Print Vocabulary x Level



# Sentence Processing x Level



# Passage Comprehension x Level

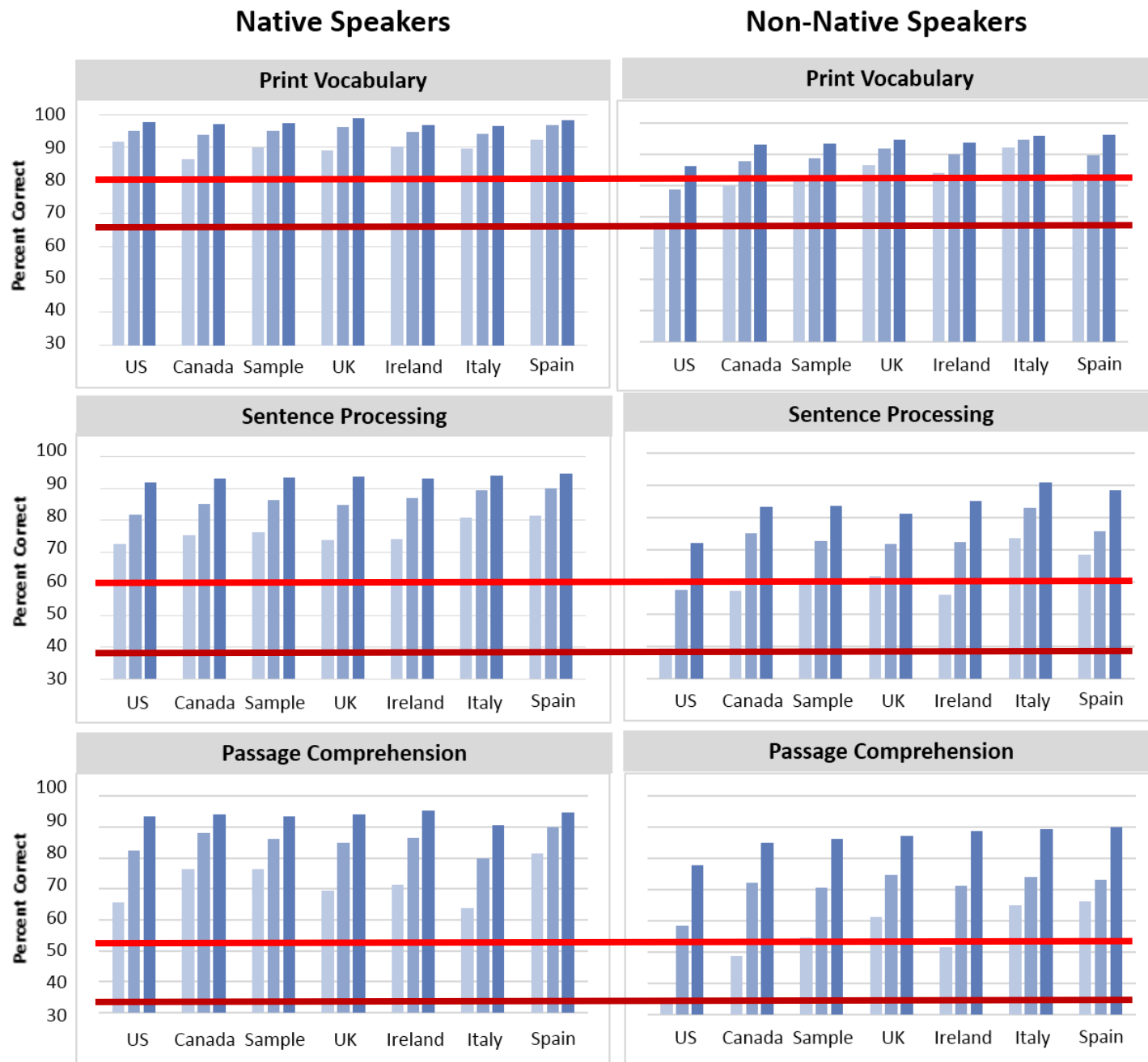


# Native vs. Non-Native Speakers

Vocabulary

Sentences

Passage Comp

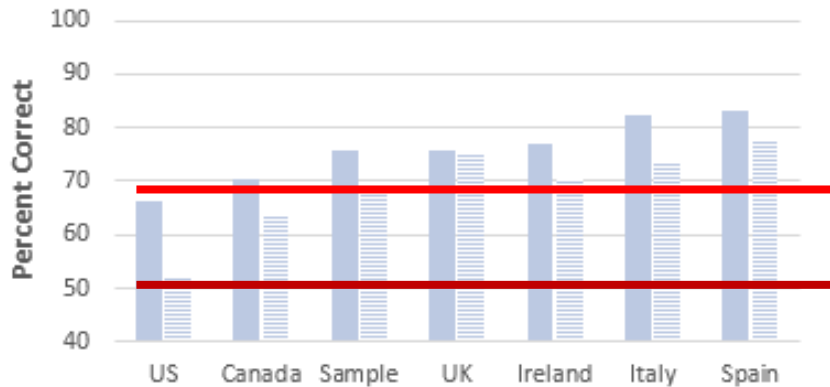


Below Level 1 Level 1 Level 2

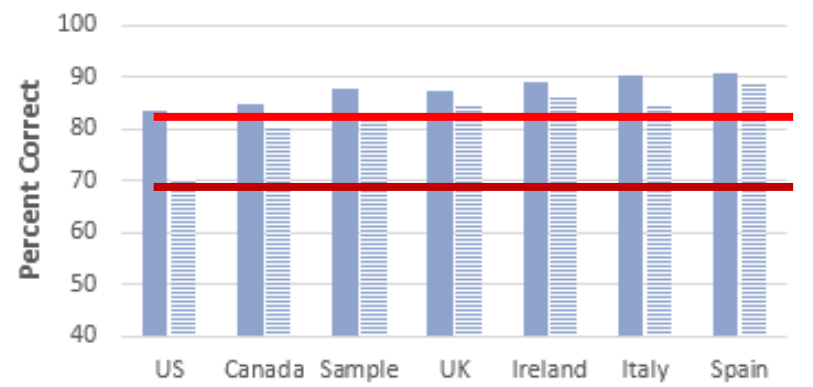
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# Computer Experience

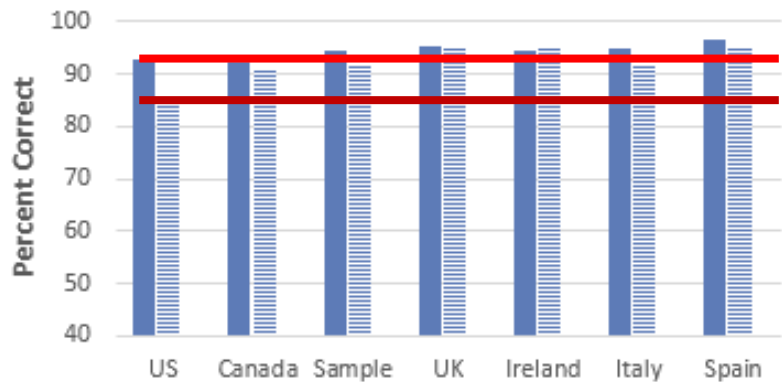
## Below Level 1



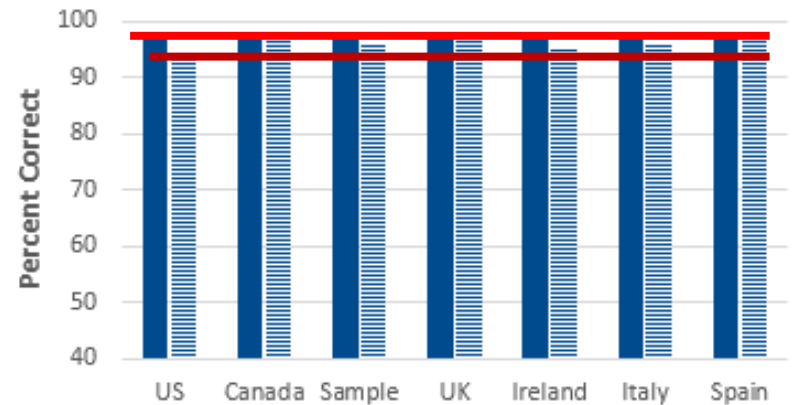
## Level 1



## Level 2



## Level 3



■ Computer Experience ■ No Computer Experience



# Predicting Literacy Score with RC: Multiple Regression Results

Country	VOC	SENT	COMP	VOC+ SENT	ALL Read Comp	All RC + Time
United States	0.10	0.23	0.23	0.24	0.27	<b>0.42</b>
Canada	0.06	0.19	0.16	0.20	0.22	<b>0.36</b>
SAMPLE	0.04	0.14	0.13	0.14	0.17	<b>0.30</b>
United Kingdom	0.07	0.17	0.14	0.18	0.20	<b>0.33</b>
Ireland	0.03	0.12	0.12	0.13	0.15	<b>0.22</b>
Italy	0.03	0.09	0.11	0.09	0.13	<b>0.23</b>
Spain	0.05	0.11	0.13	0.12	0.15	<b>0.26</b>

# Key Findings

## General:

- U.S. **At** and **Below Level 1** scored lowest
- U.S. at **Level 2** comparable to other countries.
- All **Level 3** adults in all countries highly accurate.

## Print Vocabulary: U.S. lowest in group

- **Below Level 1** (77% vs. 86%)
- **Level 1** (89% vs. 93%)
- On positive note, even **Below Level 1** U.S. adults recognize printed words of common objects such as animals, furniture, and shapes.

# Key Findings

## **Sentence Processing:** US even further behind

- **Below Level 1** (52% vs. 69%),
  - **Level 1** (72% vs. 81%),
  - **Level 2** (87% vs. 91%)
- Many **Below Level 1** adults not able to understand and evaluate even short sentences.

## **Passage Comprehension:** US far behind

- **Below Level 1** (47% vs. 62%)
  - **Level 1** (73% vs. 81%)
- Many **Below Level 1** adults not able to read passages for basic understanding.

# Key Findings

## Reading Components Rate:

- US **not** disproportionately slower than other countries
- Accuracy and rate related across all ability levels.
  - That is, **Below Level 1** adults need more time to achieve their levels of performance than **Level 1**,
  - **Level 1** more time than **Level 2**, and so on across **Levels 3, 4, and 5**.
- Suggests that fluency or automaticity of component skill processing is part of the underlying foundation of literacy for most adults.

# Key Findings

## Nonnative Speakers of the Test Language:

- Source of US (vs. Intl) difference
- **Below Level 1** (47% vs. 76%),
- **Level 1** (65% vs. 86%),
- **Level 2** (79% vs. 95%),
- **Level 3** (92% vs. 98%),
- **Level 4/5** (99% for both groups).

## Native Speakers of Test Language only:

- US comparable to other countries
  - **Below Level 1** (76% vs. 78%)
  - **Level 1** (86% vs. 89%)
  - **Level 2** (95% for both)

# Key Findings

## Multiple Regression Models:

- International average showed a
  - **Vocabulary** – (4%)
  - **Sentence** (13%)
  - **Comprehension** (14%),
  - **All RC** (17%)
  - **Accuracy plus Rate** - most (30%)
- The relationship was relatively stronger in the U.S. sample in comparison to the six countries sampled.
- Suggests that fluency and efficiency should be a target of reading programs.

# Implications and Conclusions

# Implications - Policy

Existing intervention research suggests that

- unlikely that it will be easy or quick for low skill adults to learn to read fluently
- not quicker or easier than we expect of children learning to read.
- which typically takes up to 12 years, immersive, developmental learning for a child to become proficient



# Implications - Policy

- Stakeholders need to be realistic about the progress one can expect in the short-term from instructional programs
- But adult learners have their entire lives to traverse this learning space.
- Policy formulations should
  - draw upon the reading and learning sciences literature,
  - take advantage of digital technologies, and
  - be more sensitive to what it means to be a lifelong learner.

# Implications - Policy

- **English Language Learners** - The needs of English Language Learners continue to be a priority for policy and practice in the US
- **Digital Technologies** - It is time for the promise of digital technologies to be front and center of policy solutions, which may require a change in the
  - infrastructure,
  - delivery, and
  - support for adult education.

# Implications - Practice

- **Reading component assessments** help us understanding the nature and depth of reading difficulties that low literate adults may need to overcome.
- There are **learning science based practices** that may be effective at the word, sentence, and passage levels of reading that can be consulted.
- Building **reading fluency and stamina** may be an important part of the solution.
  - Practice, practice, practice – read, read, read!
- Not news, but **English Language Learners** are likely to have different needs, and therefore may require different instructional and social supports.

# Conclusions

- We remain hopeful that substantial progress in enhancing the literacy abilities of adults with low skills in the U.S. can be achieved.
- But the evidence here and extant research suggest that
  - it will require a comprehensive and sustained effort and investment,
  - both on the part of the adult learners, and
  - the programs and policies designed to support them.

# Thank you!

Report can be found at:

<http://www.ets.org/research/report/reading-skills>