

Adults' Readiness to Learn as a Predictor of Literacy Skills

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Purpose of Study

Analyze the data from the U.S. sample of the *Program for the International Assessment of Adult Competencies* (PIAAC) survey, with the aim of examining the importance of readiness to learn to adults' literacy skills as well as their uses of these and other important skills in different contexts.

Overview

- Does RtL predict skill outcomes?
 - Literacy
 - Numeracy
 - Problem-Solving in Technology-rich Environments [PS-TRE]?
- Does RtL predict use of skills at home and work?
- Mediating and moderating effects of RtL on the relationship between selected demographic variables (age, education, gender, and work experience) and skill level/use

PIAAC reports indicate...

- U.S. population falling behind on skill level
- U. S. adults scored higher on the use of skills
- Overall, PIAAC researchers have identified a mismatch between skill level and skill use

Review of Literature

- PIAAC data permits examination of both literacy skill levels and skill use at home and in workplace
- Previous studies using PIAAC have looked at skills in terms of human capital
 - Relationship to earnings (Hanushek et al. 2013)
 - Mismatch between skill level and use (Allen, Levels & van der Velden, 2013)
- Have not examined how non-cognitive factors might relate to these skills
- PIAAC Background Questionnaire included such factors as part of RtL

Logic for exploring role of RtL

Non-cognitive constructs such as:

- self-regulation,
- time management, and
- motivation

are critically important for outcomes in later life, including workplace success.

(Heckman & Rubenstein, 2001)

Readiness to Learn

Operational definition

- Cognitive scaffolding (i.e., how new material is integrated into existing knowledge);
- Curiosity or enjoyment of learning new things;
- Approaches to overcoming difficulty in one's learning;
- Problem solving or looking for connections among ideas.

Readiness to Learn scale

Item	Item description
	<i>“I would now like to ask you some questions about how you deal with problems and tasks you encounter. To what extent do the following statements apply to you?”</i>
Item 1	When I hear or read about new ideas, I try to relate them to real life situations to which they might apply
Item 2	I like learning new things
Item 3	When I come across something new, I try to relate it to what I already know
	<i>To what extent do the following statements apply to you?</i>
Item 4	I like to get to the bottom of difficult things
Item 5	I like to figure out how different ideas fit together
Item 6	If I don't understand something, I look for additional information to make it clearer

Note. Response options are:

1 = *Not at all,*

2 = *Very little,*

3 = *To some extent,*

4 = *To a high extent, and*

5 = *To a very high extent*

Research Questions

1. How does U.S. adults' readiness to learn predict their skill levels in literacy, numeracy, and problem solving in technology-rich environments (PS-TRE)?
2. Does readiness to learn mediate the effects of gender, age, work experience, and education on literacy, numeracy, and PS-TRE skill levels?
3. Does readiness to learn moderate the effects of gender, age, work experience, and education on literacy, numeracy, and PS-TRE skill levels?

Research Questions – ctd.

4. How does readiness to learn predict the extent to which specified literacy skills (reading writing, numeracy, and information and computer technology [ICT] skills) are used by U.S. adults at work and at home?
5. Does readiness to learn mediate the effects of gender, age, work experience, and education on the use of specified literacy skills (reading writing, numeracy, ICT skills)?
6. Does readiness to learn moderate the effects of gender, age, work experience, and education on the use of specified literacy skills (reading writing, numeracy, ICT skills)?

Method

- Data: PIAAC Survey of Adult Skills
 - Direct Assessment
 - Module on Skills Use
 - Background Questionnaire
- U.S. sample only ($N = 5010$)
 - Adults 16-65 years of age
 - 51% female; 49% male
 - Age uniformly distributed
 - Education: $M = 13.3$ ($SD = 3.1$)
 - Years of FT work experience: $M = 19.4$ ($SD = 13.2$)

Method (ctd.)

Effects of Readiness to Learn on skill levels and skill use (RQ1, RQ4)

- Multiple regression
- Dependent variables:
 - Skill level (literacy, numeracy, problem-solving in technology-rich environments)
 - Skill use (reading, writing, numeracy, ICT skill at work and at home)
- Predictor variables:
 - Readiness to Learn
 - respondent's age
 - number of years of formal education
 - gender
 - years of full-time work experience

Method (ctd.)

Mediating and moderating effects of RtL

- RQ2, RQ5: Regression analyses with Sobel's test for mediating effects of RtL
- RQ3, RQ6: Regression analyses with interaction (moderating) effects

- All analyses employed sampling weights
- Standard errors estimated using jackknife replications
- Plausible values used for skills measures

Findings: RQ1

How does U.S. adults' readiness to learn (RtL) predict skill levels in literacy, numeracy, and problem solving in technology-rich environments (PS-TRE)?

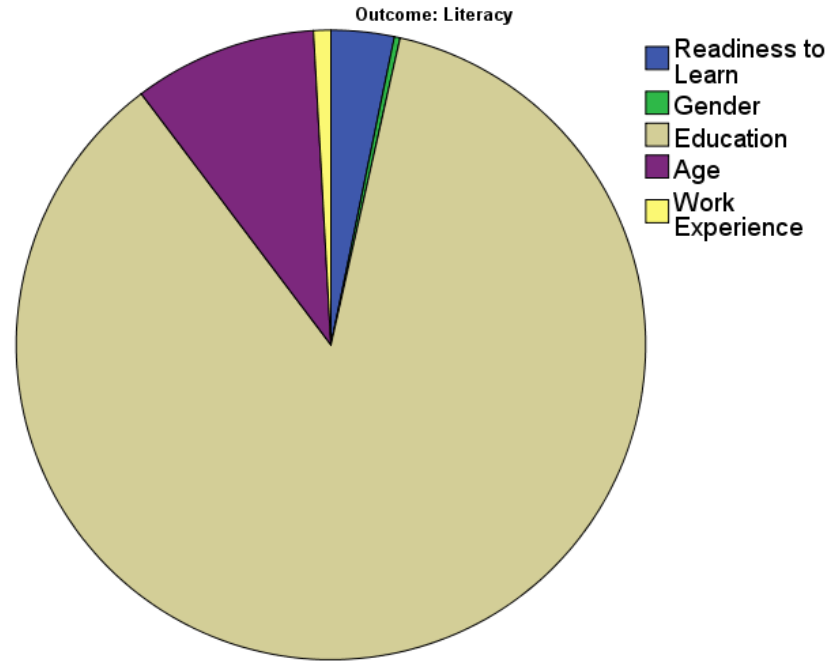
- RtL significantly (positively) predicted each of the three skills (literacy, numeracy, and PS-TRE)
- However, the relative strength of prediction was weak

Findings: RQ1 (ctd.)

- Other predictors of literacy, numeracy, and PS-TRE skill levels:
 - Years of education
 - positive predictor of all three skills
 - strongest of the predictors
 - Age
 - relatively weak negative predictor of literacy and numeracy
 - relatively strong predictor of PS-TRE
 - Years of FT work experience
 - relatively weak predictor of all three skills
 - Gender
 - relatively weak predictor of numeracy and PS-TRE
 - males score higher than females

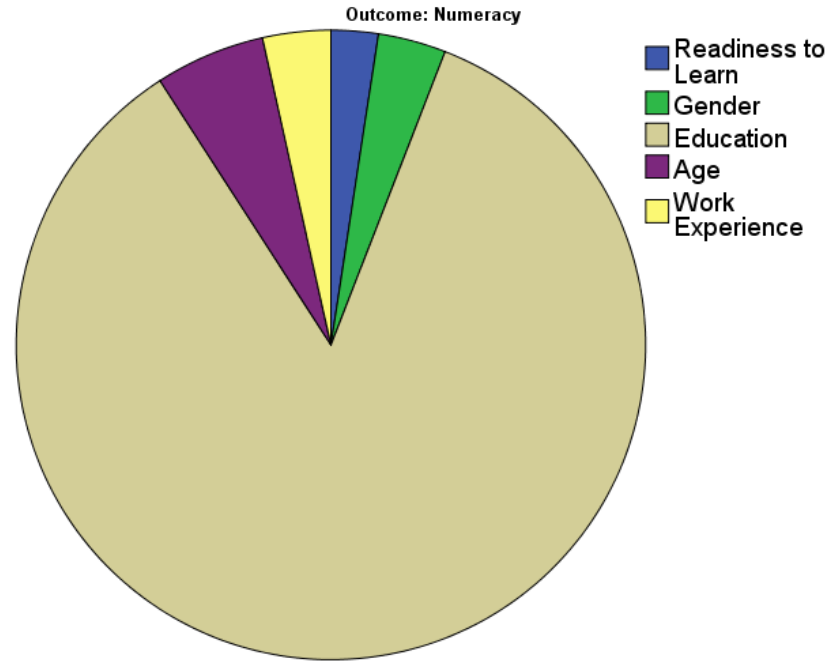
Relative importance of predictors

DV= Literacy



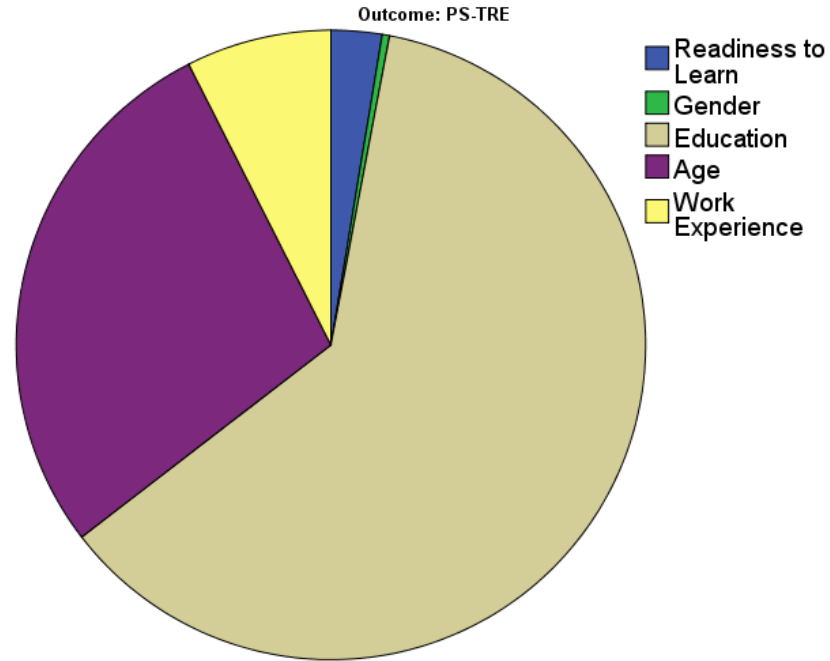
Relative importance of predictors

DV= Numeracy



Relative importance of predictors

DV = PS-TRE

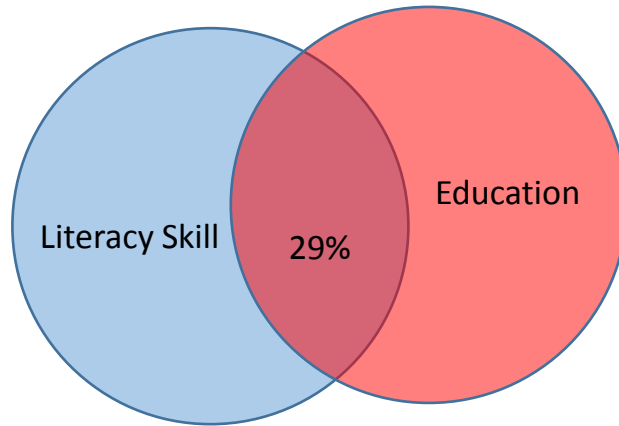


Findings: RQ2

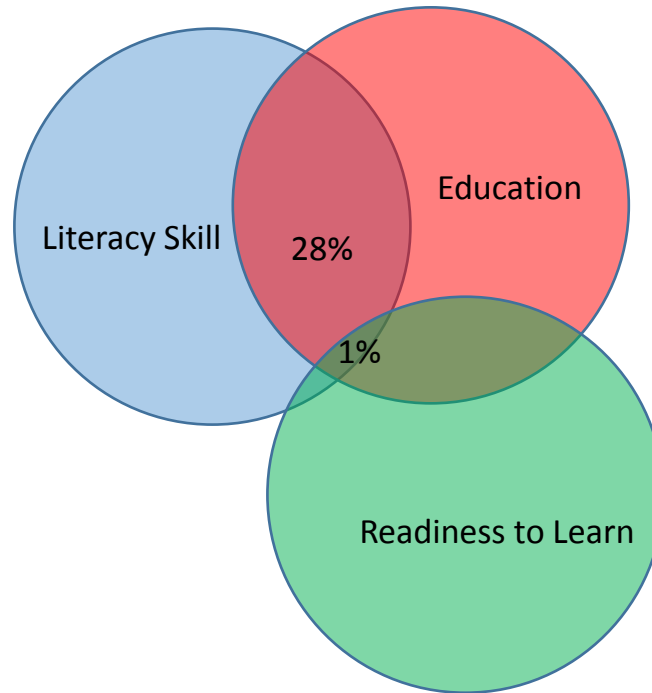
Does readiness to learn mediate (i.e., explain) the effects of gender, age, work experience, and education on literacy, numeracy, and PS-TRE skill levels?

- RtL partially mediated (i.e., partially explained) the effects of education, age, and work experience on each of the three skill outcomes
- RtL did not mediate (i.e., explain) the effects of gender on skills

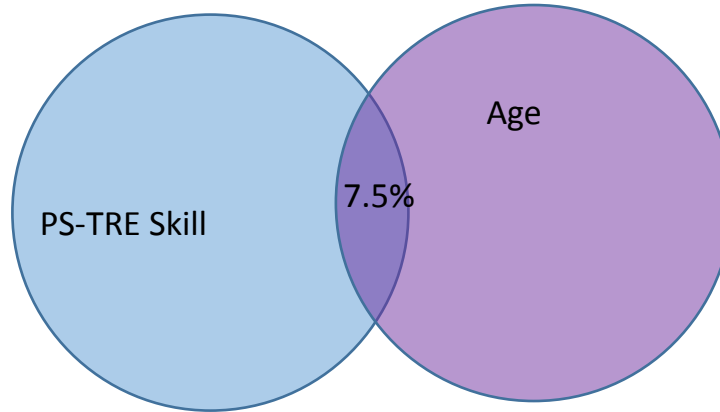
Percentage of literacy “explained” by education



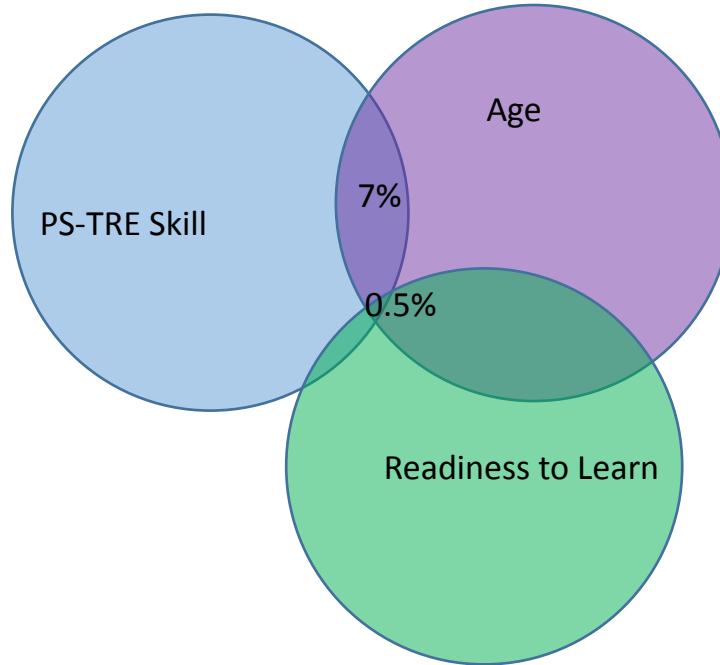
Percentage of literacy “explained” by education mediation by readiness to learn



Percentage of PS-TRE skill “explained” by age



Percentage of PS-TRE skill “explained” by age mediation by readiness to learn

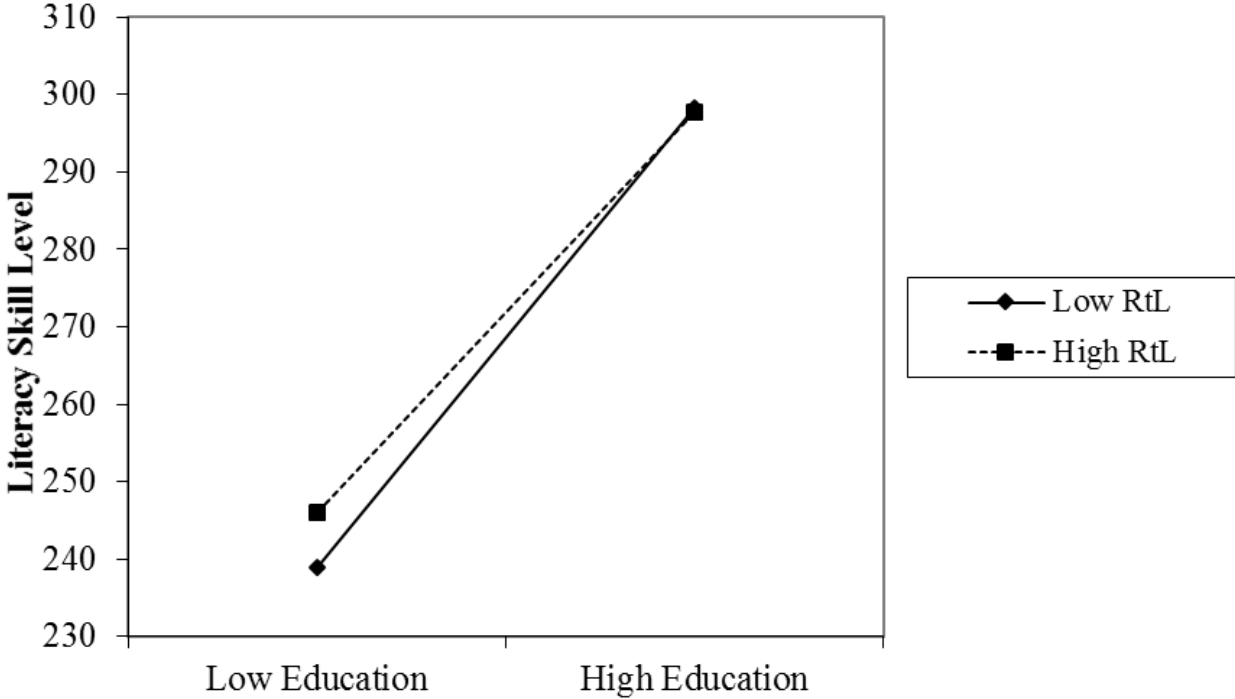


Findings: RQ3

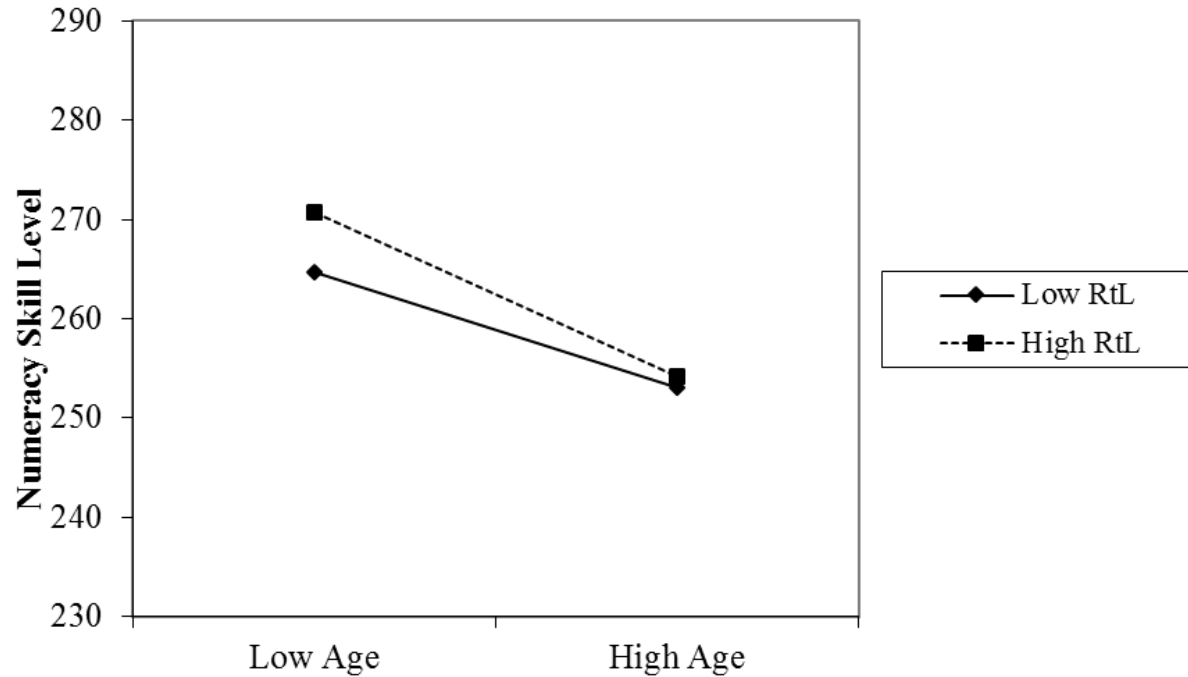
Does readiness to learn moderate (i.e., change) the effects of gender, age, work experience, and education on literacy, numeracy, and PS-TRE skill levels?

- RtL moderated (i.e., changed) the effects of education on literacy and numeracy skills
- RtL moderated (i.e., changed) the effects of age on literacy and numeracy

Moderating effect of RtL on the relationship between education and literacy skill



Moderating effect of RtL on the relationship between age and numeracy skill



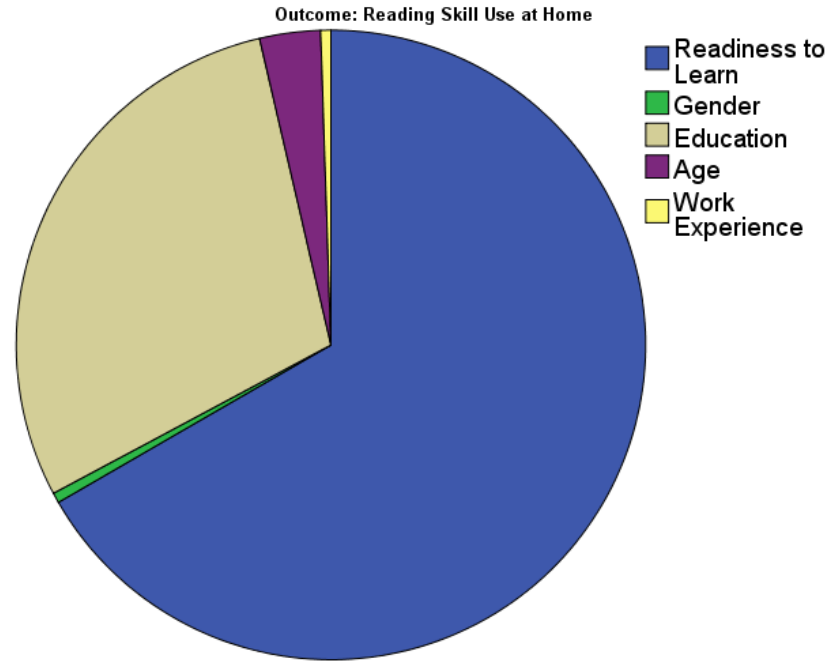
Findings: RQ4

How does readiness to learn predict the extent to which specified skills are used by U.S. adults at work and at home?

- RtL positively predicted use of each of the three skills (literacy, numeracy, and PS-TRE) both at home and at work
- The relative strength of prediction for RtL was strong for skill use at home, weak for skill use at work

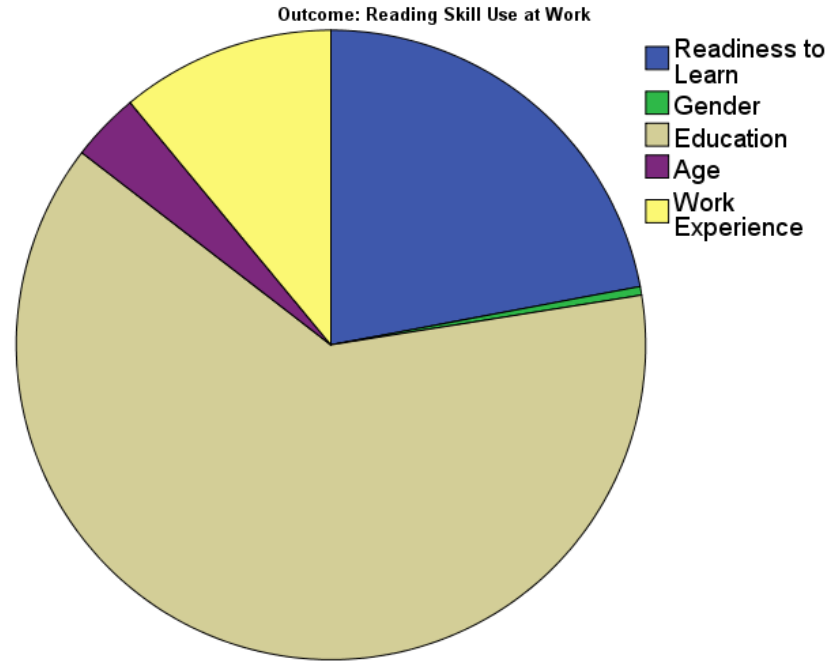
Relative importance of predictors

DV = Reading skill use at home



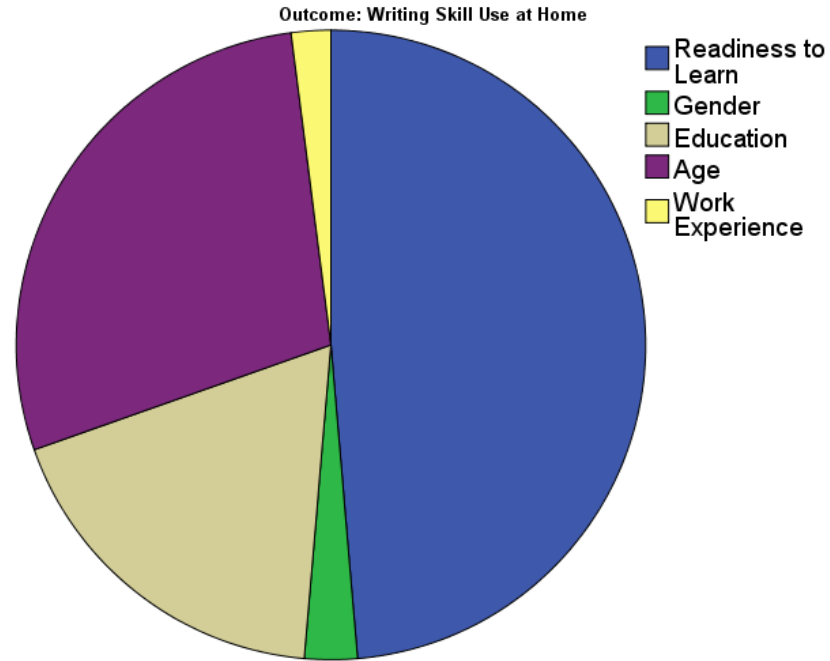
Relative importance of predictors

DV = Reading skill use at work



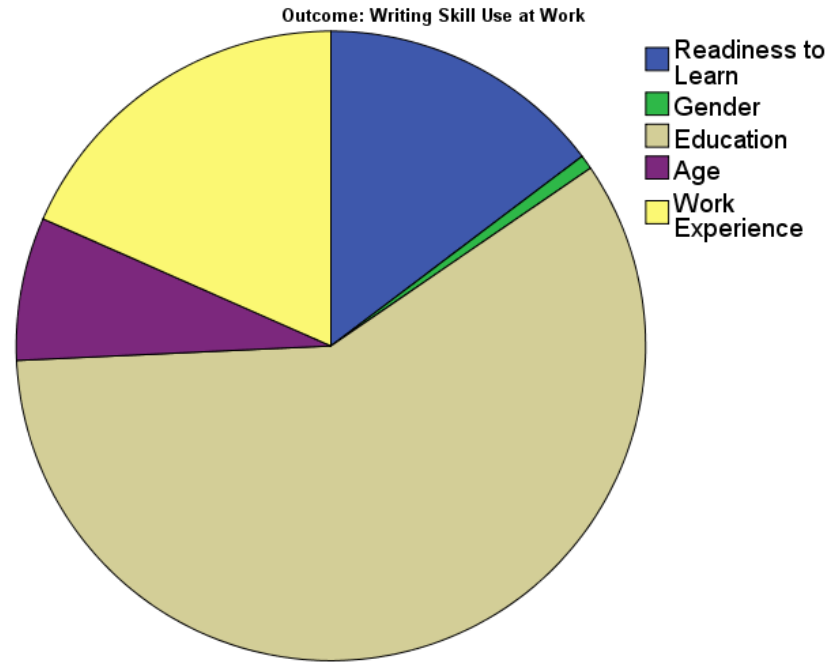
Relative importance of predictors

DV = Writing skill use at home



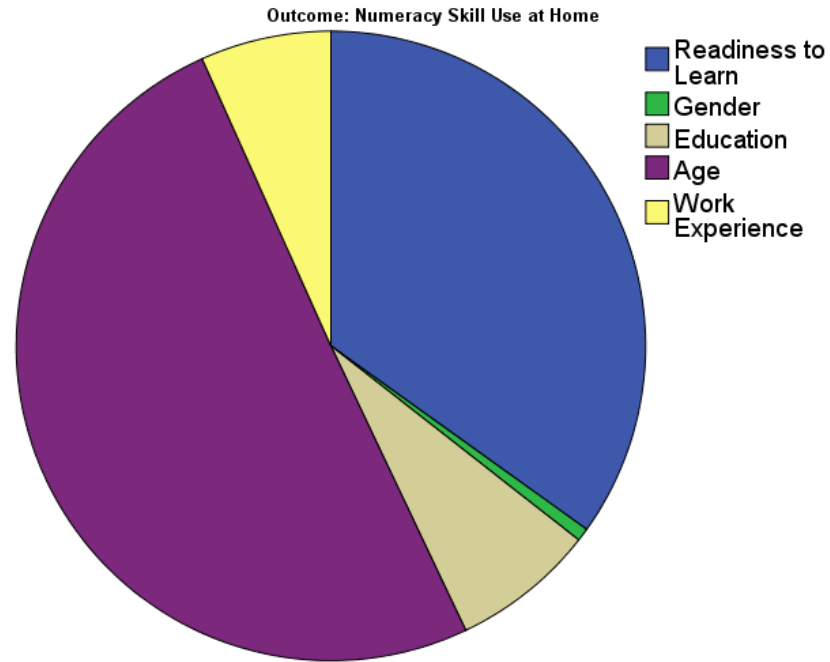
Relative importance of predictors

DV = Writing skill use at work



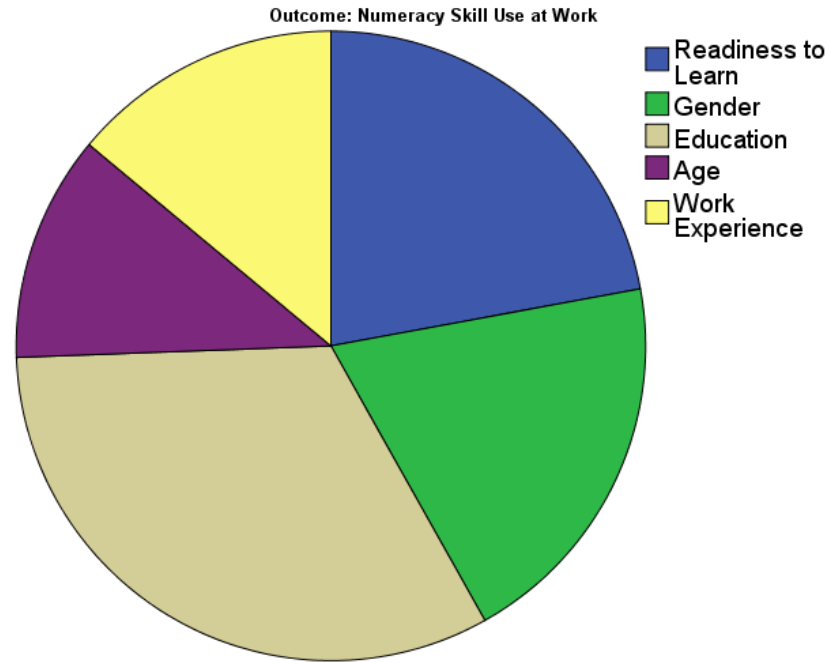
Relative importance of predictors

DV = Numeracy skill use at home



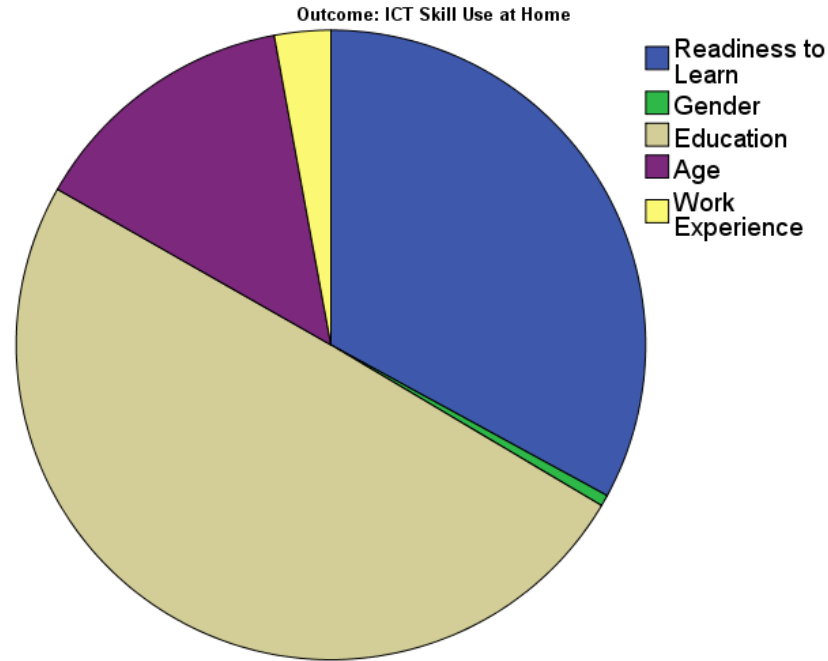
Relative importance of predictors

DV = Numeracy skill use at work



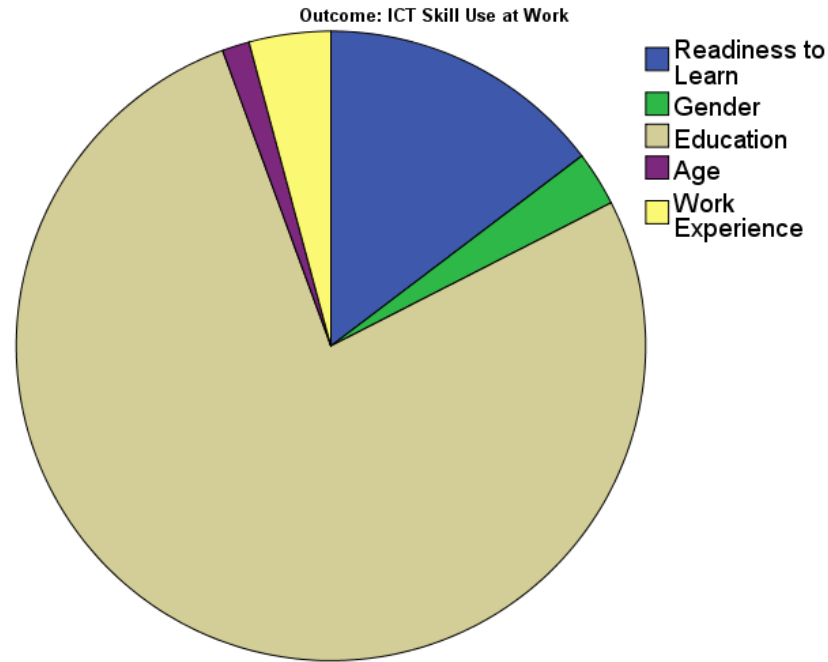
Relative importance of predictors:

DV = Information and Communication Technology (ICT) skill use at home



Relative importance of predictors

DV = Information and Communication Technology (ICT) skill use at work



Findings: RQ5

Does readiness to learn mediate the effects of gender, age, work experience, and education on the use of specified skills (reading writing, numeracy, ICT skills)?

- RtL consistently partially mediated (i.e., partially explained) the effect of education, work experience, and age on skill use, both at home and in the workplace
- RtL did not mediate (i.e., explain) gender differences in skill use

Findings: RQ6

Does readiness to learn moderate (i.e., alter) the effects of gender, age, work experience, and education on the use of specified literacy skills (reading writing, numeracy, ICT skills)?

- RtL moderated (i.e., altered) the effect of education on...
 - ICT skill use at work
 - Numeracy skills at home
 - Reading skills at home and work

Implications

- Adult education practices that enhance readiness to learn among low education workers may be particularly important
- Need to leverage learning readiness in the workplace toward the application of a more diverse array of skills
- Considerable attention has been paid to the transfer-of-learning from training programs to authentic work situations
 - It may be equally important to consider how to nurture such transfer of skill use from home to work

Implications (ctd.)

- Importance of individual interest, curiosity, and the ability to derive meaning from ideas and concepts
 - Transfer could be encouraged by establishing more meaningful connections between work experiences and the need for new learning
- Allocation of training resources
 - Workplace training that is appropriately contextualized for low literacy and low skill individuals may be particularly beneficial

Further research questions

- What is the relationship of readiness to learn in relation to other constructs such as employment status, social engagement, skill development, and skill use in diverse settings?
- What is the relationship between readiness to learn and participation in adult education activities?
- How does the relationship between readiness to learn and skill level/use differ among countries?
- What are the psychometric properties of scores from the Readiness to Learn scale?