

Adult Competencies and Employment Outcomes Among Older Workers in the United States: An Analysis of the Program for the International Assessment of Adult Competencies

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Abstract

A growing segment of the U.S. workforce—older workers—face challenges such as a greater chance of being unemployed for a longer period of time than younger workers and skill obsolescence in contemporary societies. In an age of fast-paced economic and technological change, ongoing investment in human capital in the form of skill training represents a potential strategy for improving older workers' employment prospects. However, empirical evidence is lacking on the relationship between basic skill competencies and employment outcomes for older workers in general. This study analyzed nationally representative data of adults aged 45 to 65 years ($n = 2,169$) from the Program for the International Assessment of Adult Competencies. Literacy skills were used as the main measure of competencies. Results from multinomial logistic regression identified statistically significant positive associations between literacy skills and employment among older workers. Implications for research, policy, and practice are discussed.

Keywords

population aging, retirement, adult education, lifelong learning, life course

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As the U.S. population ages, middle-aged and older workers represent an increasingly large segment of the labor force. Although the proportion of workers aged 55 to 64 years has increased in recent decades, unemployment among middle-aged and older workers represents a significant concern, creating costly challenges for individual workers and the economy as a whole (Butrica, 2011; Feyrer, 2007). Following the Great Recession, older workers experienced relatively long periods of unemployment, placing increased strain on the workers, their families, and the social welfare programs. Education and training are generally considered as key strategies for addressing these employment-related challenges through improved skills (Carnevale, Smith, & Strohl, 2013; Jacobson, LaLonde, & Sullivan, 2005). However, the relationship between general skill proficiencies and employment outcomes is yet to be rigorously investigated at the population level. In the past, a lack of nationally representative data with valid measures of general skills limited the scope of inquiry on this subject. To address this gap in the literature, the present study analyzed nationally representative data on older workers in the United States to examine the association between literacy skills and employment outcomes. In this study, adults in the preretirement age-group (45-65 years) were considered older workers.

Labor Force Participation and Unemployment Among Older Workers

With the aging of the U.S. population, older workers constitute a rapidly growing segment of the labor force. For example, approximately 9% of the U.S. labor force was aged 55 to 64 years in 1994, but it is expected to exceed 17% by 2024 (Toossi, 2015). While labor force participation rates have increased in recent years for both men and women aged 55 and older, participation rates for men and women in the 45 to 54 age-group have declined, and the rate of decline was greater in the United States than in other countries that are members of the Organisation for Economic Co-operation and Development (OECD). Between 2000 and 2014, for example, the participation rate for men aged 45 to 54 declined from 89% to 86% in the United States, while the rate in the United Kingdom increased from 88% to 91% (OECD, 2015b). Such differential trends of the labor force participation rates by particular age-groups may be explained by the segments of older workers who are low skilled and have low educational attainment (Office of the President, 2014). Employment opportunities have shifted from routine manual work to jobs requiring higher cognitive skills (e.g., complex problem solving with new technologies) (Buera, Kaboski, & Rogerson, 2015; OECD, 2012).

Generally, older workers (45-64 years) have lower rates of unemployment compared with younger workers. However, after becoming unemployed, older workers often face substantially longer periods of unemployment than their younger counterparts. For example, in 2015, the average duration of unemployment was 35.5 weeks for the workers aged 45 to 54 years and 27.4 weeks for those aged 25 to 34 years (U.S. Bureau of Labor Statistics, 2016). Longer periods of unemployment are of concern in the fast-changing contemporary U.S. labor market because the longer individuals are unemployed, the more their skills depreciate (Abraham, Haltiwanger, Sandusky, & Spletzer, 2016). Additionally, the United States may face negative economic

consequences. For example, a higher unemployment rate often results not only in lower tax revenue but also in the greater use of the Social Security Disability Insurance program, which puts tremendous pressure on the Social Security Trust Fund (Daly, Lucking, & Schwabish, 2013). To avoid the vicious cycle of unemployment and skill depreciation among the growing segment of older workers, acquiring and maintaining the fundamental skills that employers demand are critical (Czaja & Moen, 2004; Guzman, Pawliczko, Beales, Till, & Voelcker, 2012).

Competencies and Employment

Most new and advanced skills are built on fundamental skills such as literacy (Rudd, Moeykens, & Colton, 2000). Therefore, one may predict that adults who possess proficient literacy skills have an advantage both for achieving and maintaining employment. In fact, the reports of the national data show that adults with greater literacy skills are more likely to be employed than those less proficient in literacy (OECD, 2015a). Moreover, among unemployed individuals, adults aged 55 to 65 years (29%) were more likely to have the lowest two levels of literacy skills than any other age-groups (22%-26%) (Rampey et al., 2016). Additionally, adults with lower literacy skills, as well as those with lower educational attainment, tend to have physically demanding low-skilled blue-collar occupations, which are generally more challenging to aging workers (Grotlüschen, Mallows, Reder, & Sabatini, 2016; Neumark & Song, 2012; Rho, 2010). In short, existing evidence suggests that there are underlying associations between fundamental skills like literacy and employment outcomes.

In light of these associations, adult education over the life course is crucial. It is clear that inequalities in formal education in earlier life stages as well as in adult education translate to a gap in competencies in later life (OECD, 2005). In addition, aging is known to be associated with lower literacy skills, which partially determines readiness to acquire new and advanced knowledge and, in turn, employability (Goodman, Finnegan, Mohadjer, Krenzke, & Hogan, 2013). Given the interactions among education, aging, and competencies, continuous engagement in lifelong learning and adult education is key for addressing inequality in multiple life domains such as employment and well-being (e.g., Desjardins, 2003; MacArthur Foundation Network on an Aging Society, 2012). Continuous learning and ongoing skill development are also necessary to adapt to the demands of rapid changes in technology and to sustain economic growth (Hulten, 2017; Lisbon European Council, 2000).

Theoretical Framework

This study is guided by two theories: human capital theory and practice engagement theory. Human capital can be defined as “productive wealth embodied in labor, skills, and knowledge” (Tan, 2014, p. 412). Investment in education and training leads to the improvement in one’s competencies. As such, both individuals and societies benefit from education and training of labor force through enhanced productivity and employment opportunities (Becker, 1962). If unemployed workers lack human capital for jobs

that are in demand, their employment prospects are limited (Wanberg, 2012). Globalization and automation of work by new technology, along with more rapid skill obsolescence, have increased the need for ongoing investments in human capital among older workers (Farkas, 2009; Schuetze, 2007). In this context, readiness to learn new skills or general competencies is critical. In this study, following the approach taken by the OECD (2016a), we employed literacy skills as an indicator of general competencies. On a related note, numeracy is often considered a critical component of basic competencies. However, this study focuses on literacy skills because literacy skills constitute more a general competency than numeracy, which is specific to quantitative tasks as well as certain occupations/industries (PIAAC Literacy Expert Group, 2009). Also, literacy and numeracy are known to be highly correlated, and therefore, literacy skills provide a strong indicator of competency (e.g., Green & Riddell, 2013; Yamashita & Kunkel, 2015). An examination of literacy skills and employment outcomes should be conducted first, before more specialized competencies such as numeracy.

Practice engagement theory proposes that skill engagement and skill proficiency in literacy practices reinforce each other over the life course and that engagement can occur in a variety of contexts (Desjardins, 2003; Reder, 2009; Sheehan-Holt & Smith, 2000). Interventions designed to promote skill use among low-skilled adults, both at work and outside work, could be an important strategy for raising skill levels over the long term (Grotlüschen et al., 2016; Reder, 2015). Indeed, Reder (2012) and Desjardins (2003) argue that engaging in literacy practices in a variety of settings (e.g., formal and informal education settings) is associated with improvements in literacy skill proficiency over time. As such, the use of literacy skills should be taken into account when examining literacy skills and employment outcomes. Taken together, human capital theory and practice engagement theory suggest that analysis of not only education but also skill proficiencies and skill use is needed to achieve a better understanding of the situation of older workers and to explore a fuller range of possible interventions. The present study examines these factors and can inform future research on the associations between education, skill proficiencies, skill use, and employment outcomes in the older workforce.

Research Question and Hypothesis

While the proportion of older workers has been increasing in the U.S. labor market, several challenges have emerged, including the employment disadvantages among low-skilled workers and potential economic consequences at the societal level (e.g., increased use of social welfare programs) and at the individual level (risk of poverty and economic insecurity in retirement). Although educational attainment is difficult to alter in the older population, literacy skills are more malleable over the life course (Hatch, Feinstein, Link, Wadsworth, & Richards, 2007). Existing data suggest that literacy skills are related to employment outcomes (Goodman et al., 2013). A logical next step is to rigorously document the associations between literacy skills and employment outcomes among older workers and to identify interventions and inform

the development of education programs to help older workers obtain new and in-demand skills. This study addressed the following research question: Are literacy skills and use of literacy skills associated with employment status among older workers in the United States? It is hypothesized that literacy skills, as well as use of literacy skills, are associated with employment status. Specifically, it is hypothesized that older workers with greater literacy skills as well as greater use of literacy skills are more likely to be employed than their counterparts.

Method

Data

The data were obtained from the Program for the International Assessment of Adult Competencies (PIAAC) U.S. module public use file. PIAAC is a survey organized by the OECD and conducted by each participating country. The goal of PIAAC is to assess and compare basic skills and a broad range of competencies of adults from participating countries. The assessment emphasizes cognitive and workplace skills necessary for participation in the global economy. Skills assessments, such as PIAAC, are important to confirm that adult learning opportunities are meeting the needs of all adults. Between 2008 and 2016, 33 countries participated in the first two rounds of the survey and an additional five countries are currently participating in Round 3 (National Center for Education Statistics, 2017).

The U.S. PIAAC data were collected between 2011 and 2014 to generate nationally representative data of adults aged 16 to 74 years. In addition to obtaining detailed demographic, socioeconomic, and employment-related information, PIAAC employed a sophisticated literacy assessment (described below), which offers a unique opportunity to examine the role of literacy skills. The survey respondents were recruited using complex sampling techniques (i.e., four-stage stratified probability methods). Therefore, PIAAC provided a series of sampling weights, including the final sample weight and 80 replicate weights, to correctly estimate nationally representative results. Other detailed information about PIAAC has been published elsewhere (National Center for Education Statistics, 2016a, 2016b). This study focused on adults aged 45 to 65 years. After excluding the cases (about 12%) with missing values for any variable of interest, the final analytic sample size was 2,169. Given all analyses were done with the sampling weights, replicate weights as well as the plausible values (discussed below), no missing data imputation was carried out.

Measures

Outcome variable. Employment status was examined using three categories: employed (reference group), unemployed, and out of the labor force. Employment includes full-time, part-time, and self-employed. The unemployed are not employed but looking for a job, whereas out of the labor force status includes those currently not employed and not looking for work. At the time of this study, the three-category employment status

is the most commonly used employment categories with the PIAAC research (AIR PIAAC Team, n.d.).

Predictor variables. Literacy skills were assessed based on performance in a series of literacy-related tasks in the PIAAC. Briefly, a selected set of literacy tasks was administered, and literacy skills were statistically estimated using the item response theory and latent regression models with the background (e.g., demographic) information. PIAAC provides 10 sets of plausible values, which are derived mean literacy scores from the estimated distribution of performance. More technical and mathematical details about the derivation and calibration of the plausible values have been published elsewhere (e.g., see OECD, 2016b).

Covariates. Age was recorded in age-groups. The PIAAC public use file does not provide continuous age information (e.g., years). Age was constructed as an ordinal variable with four levels, from the youngest to the oldest. The youngest age-group in this study was 45 to 49 years, followed by 50 to 54, 55 to 59, and 60 to 65 years. Sex was coded as a dichotomous dummy variable (women or men). Race was also coded as a dichotomous dummy variable (White or non-White). Preliminary analyses included more detailed racial/ethnic groups; however, sample sizes for most racial/ethnic minority groups were insufficient for reliable estimations in subsequent analyses. Education was coded as a dichotomous variable, indicating whether or not the respondent had a college education or higher (associate, bachelor, doctorate). Given the distribution of the data and conceptual separation (e.g., the secondary higher education), the two categories of educational attainment were chosen. Self-rated health was coded as a dichotomous variable (positive [excellent, very good, good] vs. negative [fair, poor]). In light of the overall distribution (e.g., low counts in the poor health category), self-rated health was dichotomized. Use of literacy skills was assessed using indices of the use of reading skills and writing skills in everyday life, which were derived from eight (e.g., read directions and instruction, articles in the newspaper) and four (e.g., write letters or memos, fill in forms) skill use items, respectively (OECD, 2016b). A higher value indicates greater use of relevant skills.

Statistical Analysis

To incorporate the plausible values and PIAAC-specific sampling weights into the statistical analysis, we used the SAS macro program developed by the International Association for the Evaluation of Educational Achievement (2017). The SAS macro program is designed to take the sampling weights, replicate weights, and plausible values into account simultaneously. All analyses were conducted using SAS version 9.4 (Copyright © 2013, SAS Institute Inc.). The final sample weight (SPFWT10) and 80 replicate weights (SPFWT1-SPFWT80) were applied for all analyses. Weighted descriptive statistics were computed for all variables of interest in this study.

Multinomial logistic regression was used to examine the differential effects of literacy skills and use of literacy skills on employment status with three nominal categories (Hosmer, Lemeshow, & Sturdivant, 2013). Specifically, the likelihood of being employed versus unemployed, and being employed versus out of the labor force, were simultaneously modeled as a function of literacy skills, use of literacy skills, and covariates. An unconditional model (i.e., a model without the covariates) was examined first, then a fully conditional model (i.e., a model with covariates added) was constructed. This model-building step is one strategy to rule out an artificial relationship. The model fit was assessed using the Akaike information criterion (AIC; Hosmer et al., 2013). The AIC is one of the common model fit indices, and a smaller value indicates a better model fit. The estimated coefficients were converted to odds ratios for interpretation. The odds ratios were one of the recommended interpretations and were obtained by exponentiating the estimated coefficients (i.e., log-odds; Allison, 2012). When the odds ratio is greater than 1 or less than 1, the effect of the predictor variable is positive (e.g., more likely to be unemployed than employed [reference group]) or negative (e.g., less likely to be unemployed than employed [reference group]), respectively. Statistical significance was assessed at the alpha level of .05.

Results

Table 1 shows the weighted descriptive statistics by employment status. The final sample size for each group only includes respondents with complete information. The average literacy skills scores (out of 500) were approximately 280, 260, and 272 for the employed, unemployed, and out of the labor force groups, respectively. While the index of reading skill use at home seemed to be similar across the groups, the out of the labor force group had a slightly lower index than the other two groups. The age distribution is comparable for the employed and the unemployed, but the out of the labor force groups had a larger proportion of the older age-group (age 60-65 years). The employed group had a slightly greater proportion of men, highly educated individuals, Whites, and positive health compared with the unemployed and out of the labor force groups. However, these are descriptive statistics, and each group had a different sample size; therefore, the interpretation should be approached with caution.

Table 2 presents the results of the multinomial logistic regression analyses, including the unconditional and fully conditional models. With regard to the employed versus unemployed groups, literacy skills and use of writing skills at home were statistically significant in the unconditional model. However, only literacy skills were statistically significant ($p < .01$) after adjusting for the covariates. Specifically, for every 1-point increase in literacy skills, the odds ratio of being unemployed was lower (0.993 times odds). In other words, there was an approximately 0.7% ($1 - 0.993 = 0.007$) reduction in the odds ratio when the literacy skills score increased by 1 point, holding all other variables constant. In addition, women, those with less than a college education and those with poorer health, were more likely to be unemployed than employed.

Table 1. Weighted Descriptive Summary of the Respondents Aged 45 to 65 by Employment Status.

Variables	Employed (<i>n</i> = 1,370)	Unemployed (<i>n</i> = 310)	Out of labor force (<i>n</i> = 489)
Literacy skills, mean (<i>SD</i>)	279.89 (49.08)	259.52 (30.79)	272.31 (48.88)
Reading at home index, mean (<i>SD</i>)	2.59 (0.85)	2.67 (0.56)	2.43 (0.90)
Writing at home index, mean (<i>SD</i>)	2.12 (1.04)	2.28 (0.59)	1.82 (1.09)
Age-group (years), %			
45-49	28.71	28.77	14.51
50-54	27.39	24.53	17.80
55-59	23.04	25.65	23.79
60-65	20.86	21.05	43.90
Sex, %			
Female	51.64	60.16	66.37
Male	45.36	39.84	33.63
Education, %			
College degree or higher	48.55	35.22*	27.48
High school or less than high school education	51.45	64.78	72.52
Race, %			
White	75.29	61.05%	70.60
Other race	24.71	38.95	29.35
Self-rated health, %			
Good health	89.30	75.80	56.47
Poor health	10.70	24.20	43.53

Note. Final sampling weights and replicate weights were applied. The sample sizes were unweighted. *SD* = standard deviation.

With regard to the employed versus out of the labor force groups, only literacy skills were statistically significant ($p < .001$). After adjusting for the covariates, the statistical significance remained the same. For every 1-point increase in literacy skills, the odds ratio of being out of the labor force was lower (0.992 times odds). In other words, there was about a 0.8% ($1 - 0.992 = 0.008$) reduction in the odds ratio when the literacy skills score increased by 1 point, holding all other variables constant. In addition, older workers, women, those with less than a college education, and those with poorer health were more likely to be out of the labor force than employed. Given the AIC, the fully conditional model (AIC = 2758.851) showed a better model fit than the unconditional model (AIC = 3045.858).

Discussion

Given the increasing yet segmented labor force participation of older adults in the United States and potential consequences both at the individual and societal levels,

Table 2. Estimated Odds Ratios From the Multinomial Logistic Regressions.

Variables	Employed versus unemployed			Employed versus out of labor force		
	Unconditional model		Fully conditional model	Unconditional model		Fully conditional model
	B (SE)	OR	B (SE)	B (SE)	OR	B (SE)
Literacy skills	-0.011 (0.002) ^{***}	0.989	-0.007 (0.002) ^{***}	-0.012 (0.001) ^{***}	0.988	-0.008 (0.002) ^{***}
Reading at home index	0.040 (0.129)	n.s.	0.088 (0.138)	-0.002 (0.104)	n.s.	0.101 (0.110)
Writing at home index	0.258 (0.088) ^{**}	1.294	0.268 (0.092)	-0.0137 (0.072)	n.s.	-0.134 (0.079)
Age-group (years; 4 levels)						
Sex (women)			0.038 (0.077)	n.s.		0.501 (0.065) ^{***}
Education (college degree or higher)			0.313 (0.158) [*]	1.367		0.701 (0.156) ^{***}
Race (White)			-0.339 (0.181) [*]	0.691		-0.350 (0.128) ^{**}
Self-rated health (positive health)			-0.339 (0.184)	n.s.		0.184 (0.167)
Model fit (AIC)			-0.768 (0.203) ^{***}	0.464		-1.580 (0.146) ^{***}
Unconditional model	3045.858					0.206
Fully conditional model	2758.851					

Note. The final sample weight and replicate weights were applied. AIC is based on the mean AIC from 10 models with the plausible values. Ten plausible values were used for the literacy skills. B = estimated coefficient; SE = estimated standard error; OR = odds ratio; n.s. = not significant; AIC = Akaike information criterion. ^{*}p < .05. ^{**}p < .01. ^{***}p < .001.

this study examined two malleable factors—literacy skills and use of literacy skills—in relation to employment outcomes. Results from the weighted multinomial logistic regressions showed that literacy skills were positively associated with being employed compared with being unemployed or out of the labor force, after adjusting for demographic, socioeconomic, and health characteristics among adults aged 45 to 65 years. Although the statistical interpretation of the literacy skills score and its impact on employment status may not be intuitive, this analysis of nationally representative data showed the positive association between literacy skills and the chance of being employed. That is, the hypothesis was partially supported.

In light of human capital theory, fundamental skills such as literacy skills might be indicators of one's competencies and in turn, employability (Wanberg, 2012). Adults who are in the labor force and competent are most likely to have the option to stay employed. However, when considering the mechanism, it is not clear whether the respondents worked because they enjoyed working or they needed to work for economic reasons. By the same token, among the out of the labor force group, some may have been able to retire comfortably because of their literacy skills, while others may have been unable to find a job due to their poor literacy skills and thus withdrew from the labor market. While we can only speculate on the implications of low literacy scores for those aged 45 to 54 years who are out of the labor force, they are cause for concern because of declines in labor force participation rates for males in that age-group over the past two decades (Maestas, Mullen, & Strand, 2015).

The use of literacy skills, both reading and writing, was not associated with employment status. In view of practice engagement theory, the use of literacy skills may merely be a promoter of basic skills but not be directly associated with employment outcomes. In other words, it is possible that the use of literacy skills may be completely mediated by the skills and, therefore, was not directly related to employment outcomes. From a different perspective, as suggested by the education and employment outcome research (e.g., Harvey, 2000), not all training and education programs are designed to promote employability *per se*. The use of literacy skills could have been motivated by factors unrelated to employability. Additionally, what makes one employable could significantly vary depending on the situation (e.g., industry, other qualifications, levels of tasks at work) (Hillage & Pollard, 1998). Furthermore, the measurement of literacy skills use needs more scrutiny. In PIAAC, the measure for use of literacy skills was derived from a series of self-reported frequencies. Although the PIAAC skill use measure is one of the most systematic assessments, its validity and relevance to employment outcomes are yet to be established. At the same time, our finding about the use of literacy skills and employment outcomes among older workers needs an additional investigation to clarify the underlying mechanisms. Future research is needed to examine specific types of reading and writing activities, valid measurement of skill use, the associations by industry, and any interactions between the use of skills at home and at work.

The results from this study suggest a few preliminary policy implications. Although understudied, older adults are an important component of the U.S. labor force and are essential for its continued economic growth. To remain competitive in an increasingly

global economy with rapid technological changes, continued skill upgrades are necessary for people of all ages. Declines in labor force participation rates for the 45- to 54-year age-group combined with increases in Social Security Disability Insurance claims for that age-group suggest the need for policies that facilitate opportunities for employment-related training and education programs. In this context, the wider benefits of adult education and training may include not only maintaining or enhancing basic skills but also improving outcomes in other life domains (e.g., health, social networks) both at the individual level and at the aggregate level (e.g., community, society) (Schuller, 2004).

As such, policy efforts including the timely provision of occupational training and education programs, continuous prevention of unemployment, and timely facilitation of reemployment are needed. Close monitoring of employment trends among older adults, as well as early intervention for disadvantaged groups (e.g., long-term unemployed and low-skilled workers), should receive increased policy attention. Relatedly, one of the main findings from this study—the positive relationship between literacy skills and employment outcomes—could be incorporated into adult education and training programs to motivate sustained engagement on the part of older adults (Reder & Bynner, 2009). Although the government and public sector agencies are expected to play an important role in funding adult education and training programs, especially for the unemployed, job training is generally viewed as a responsibility that is shared by the public sector, the individual, and the employer (Cummins, Kunkel, & Walker, 2015; MacArthur Foundation Network on an Aging Society, 2012). Finally, it is critical to develop and test effective literacy-focused adult education interventions to promote and maintain the employability of older workers. Toward this end, policymakers and other stakeholders in labor and education may need to adopt a collaborative, interdisciplinary approach.

Limitations

Several limitations in this study must be acknowledged. In this study, the key concepts including competency, basic skills, literacy, and employability were in alignment with PIAAC, and as such, the external validity to different contexts or subpopulations may be somewhat limited. For example, observed associations between literacy skills and employment outcomes may not hold for all occupations or geographic locations. Additionally, the employment status classification in this study could be calibrated in future research. A decomposition of “out of labor force” to more detailed categories (e.g., retired, permanently disabled, no desire to work) would be critical, although such subclassification will most likely result in insufficient sample sizes for complex statistical analyses with the PIAAC data. Second, regardless of workers’ skill levels, employment opportunities are heavily influenced by economic conditions, and therefore, individual skills may be meaningful only in relation to the counterparts (e.g., highly skilled vs. limited skills). Possible omitted variable bias also cannot be ruled out. For example, a few traditional demographic characteristics, such as the continuous age, marital status, income (in a continuous measure), and asset information were not available in the PIAAC public use file. However, the PIAAC data are arguably the

only nationally representative data with the sophisticated literacy measures, and such strength of the data is worth noting. Additionally, because this study used cross-sectional data, it was not possible to closely examine age, period, and cohort effects or infer causality. These potential effects may be especially important for older workers because the collective behaviors (e.g., attitudes toward education and finance) of each cohort could be significantly influenced by historical and economic trends or events (e.g., Great Depression) over the life course (Elder, 1998).

Contributions

Despite the limitations, this study made several contributions. First, this study analyzed nationally representative data, making it more relevant to adult education and labor policy discussions than case studies. The PIAAC data are the most recent and comprehensive national data on skills and employment research. Additionally, the literacy skill measures adopted in PIAAC are methodologically sound and relatively unique (OECD, 2016b). Adopting the PIAAC literacy skill measures with the appropriate survey sampling weights added a new piece of evidence to literacy and employment research. Moreover, the relationships between literacy skills and employment status of understudied older workers were examined with statistical adjustments to the relevant demographic, socioeconomic, and health characteristics, although the majority of published reports provide relatively simple comparisons (e.g., employment status by the skill levels) (Goodman et al., 2013). Finally, the nationally representative findings and statistical methods adopted in this study can serve as a foundation for further examination of specific aspects of literacy skills and employment outcomes.

Conclusion

Given the increasing labor force participation rates at older ages, gaining a better understanding of the relationship between literacy skills and employment status has become more relevant. A skilled labor force is necessary to meet the needs of employers and ensure continued economic growth. This study used PIAAC data to examine a nationally representative sample of workers aged 45 to 65 years (considered the “pre-retirement phase”). Results of the regression analyses showed that the greater literacy skills are associated with greater chance of being employed than being unemployed or out of labor force among workers in the preretirement phase in the United States. Since literacy can be seen as the malleable foundation to navigate in the labor market with dynamic demands in skills, education and labor policies should incorporate the continuous competency training into future discussion and practice. Such effort may support the older workers in general and those with disadvantaged competencies in particular and, in turn, strengthen the employability of workers over the life course. Further research should replicate the findings from this study in a variety of settings (e.g., industries, geographic locations) and identify the specific pathways between the competencies and employment outcomes in hopes to inform education as well as labor policies for the well-being of older workers.

Authors' Note

This report is based on PIAAC data released in October 2016. The views expressed in this article do not necessarily reflect the views or policies of the American Institutes for Research, National Center for Education Statistics, or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply their endorsement by the U.S. government.

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