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International Research Conference (AEGT2020)
(Vancouver, BC)

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Chang Sung Jang
University of Oklahoma

Junghwan Kim
University of Oklahoma

In Tak Kwon
Jeonbuk National University

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Recommended Citation

Sung, C., Kim, J. & Kwon, I. (2020). Learning experiences and college access of American workers: Evidence from PIAAC. Peer reviewed and approved by the AERC Steering Committee for the Adult Education in Global Times Conference. University of British Columbia. Canada. (Conference Cancelled).

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WORK-RELATED LEARNING AND COLLEGE ACCESS OF WORKING ADULTS: EVIDENCE FROM PIAAC

Chang Sung Jang¹, Jihee Hwang¹, Junghwan Kim¹, In Tak Kwon²

¹*University of Oklahoma (USA)*

²*Jeonbuk National University (South Korea)*

ABSTRACT

Using the U.S. data from the Program for the International Assessment of Adult Competencies (PIAAC), this study aims to explore how work-related learning experiences of working adults influence their sub-baccalaureate or baccalaureate degree-seeking in higher education institutions (HEIs). Given many jobs in the U.S. that require higher education credentials, we examined how formal and informal work-related learning experiences are associated with the college access of working adults who have a high school diploma. The multinomial logistic regression results show that work flexibility, distance learning, and private learning experience are positively related to working adults' college access. Based on the findings, implications for policy and practice were discussed on how industry and organizations could support working adults' learning opportunities in the workplace and HEIs.

Keywords: formal/informal learning, college access, working adults, PIAAC

INTRODUCTION

Higher education credentials have been increasingly considered essential for adults' career development and social mobility (Jarvis, 2010). By 2024, fewer jobs will be available for adults with high school diplomas, while adults who have associate's degrees or higher level credentials are expected to prospect an increase in employment opportunities (Hogan & Roberts, 2015). While more jobs will require higher education credentials, recent trends show that the percentage of high school graduates who go to college immediately after graduation decreased from 69% in 2008 to 66% in 2013 (Wong, 2016). Between 2013 and 2015, 5.3 million young adults entered the workforce without college experience (Ross & Bateman, 2018). Given that higher education credentials provide adults with opportunities to address educational insufficiency and to accomplish career/personal development (National Adult Learner Coalition, 2017), these trends arouse concerns as adults who enter the workforce with a high school diploma tend to have unequal opportunities in learning or training for career advancement. Working adults, in particular, are being increasingly required to obtain individual, organizational, and societal competencies by pursuing further degrees/certificates or acquiring specialized job training at higher education institutions (HEIs) (Chao, Derocco, & Flynn, 2007; Desjardins, Milana, & Rubenson, 2006; Knapper & Cropley, 2000; Röbbken, 2009).

College access plays a critical role in working adults' social needs fulfillment and economic benefits acquisition (Rosenbaum, Ahearn, & Rosenbaum, 2017). The participation of HEIs is influenced by a variety of factors such as individual predispositions (Cerasoli, Alliger, Donsbach, Mathieu, Tannenbaum, & Orvis, 2018), socioeconomic status (Carnevale, Jayasundera, & Hanson, 2012) and multiple contexts in which working adults are situated, such as family, workplace, or community (Desjardins et al., 2006; Kasworm, 2008; Knapper & Cropley, 2000; Maurer, Weiss, & Barbeite, 2003). What is more, adults face different types of

work-related learning experiences in and out of the workplace (i.e., formal/informal learning) and these kinds of learning have been considered significant sources of knowledge and instigators of behavioral changes (Cerasoli et al., 2018; Livingston, 2001; McGivney, 1999) preliminary to working adults' choice to pursue further education. According to recent scholarly works, engaging in work-related learning opportunities help working adults to be more productive at work, improve employability, and entail greater job security, retention, and satisfaction (Pegg, Waldock, Hendy-Isaac, & Lawton, 2012; [Smith, Egglestone, Jones, & Aldridge, 2019](#)). Furthermore, the work-related learning experiences enable them to find an alternative for career development and perspective transformation by overcoming their contradictory/double-bind situation between work and academic/daily life (Boeren et al., 2010; Engeström, 2001; Maurer et al., 2003). Hence, it is necessary to pay attention to how diverse types of learning experiences can be primary sources for opportunities for working adults to pursue higher education, which is closely associated with positive economic and social outcomes (Jarvis, 2010).

Using an integrated model of participation in adult education (Boeren, Nicaise, & Baert, 2010) as a perspective framework, this study explores influential factors associated with working adults' enrollment in sub-baccalaureate or baccalaureate degree programs in HEIs. To that end, we propose the following research question: How are individual contexts, workplace conditions, and learning experiences associated with working adults enrolling in sub-baccalaureate or baccalaureate degree program in HEIs?

LITERATURE REVIEW

Working Adults in Higher Education

Adult students in higher education are defined as those who are older than 25, having no previous college experience, currently enrolling in postsecondary degree-seeking programs, economically independent, having other responsibilities, and working (Correia & Sarmiento, 2008; Kasworm, 1990), which often aggregate into the term nontraditional students. From the lifelong learning perspective, adult students are characterized with more details, as Illeris (2003) classified working adults into three groups based on their purpose: (1) young adults who wish to participate in the labor market; (2) adults who work but need to develop their job-related skills in order to maintain employability; and (3) adults who are unemployed and want to re-enter the labor market by building capability.

This study identifies working adults in higher education by employing each part of the definitions above. We define working adults as those who are 25 or older, adults who work but need to develop their skills, and students who have mature life experiences at work. These specific classifications imply that working adults have various experiences through their individual life and workplace experiences, which could be associated with their decision to pursue further education in HEIs.

Delayed HEIs Enrollment

Thirty-six per cent of 2018 high school graduates did not go to college or university, while 69.1% did so. Also, approximately 75% of those who did not go to college participated in the labor market (U.S. Bureau of Labor Statistics, 2018). This trend shows that a substantial number of young adults choose to participate in the labor market for some reason instead of attending college. Researchers have identified this population as those who 'delayed college

enrollment,' and literature provides some level of consensus in that delayed college enrollment is influenced by an individual's socio-demographic characteristics or socioeconomic status (Bozick & DeLuca, 2005; Cookson 1986; Darkenwald & Merriam 1982; Niu & Tienda, 2013). Desjardins and colleagues (2006) found that adults who are women and older were less likely to participate in educational activities. They also discovered that the 25 to 29 age group participated more in postsecondary education for job-related reasons than those of the 30 to 64 cohort. Findings of studies on delayed enrollment in HEIs are consistent in that delayers were more likely to come from families with lower socioeconomic status. Delayers tend to experience diverse life events and tend to start their labor market participation earlier than on-time college students. In contrast, on-time enrollees continue to engage in academic and social life within educational institutions. According to Oseguera and Hwang (2014), 41% of low-income youths did not enter postsecondary education, and the majority of them were employed. Considering 80% of middle or high-income youths attended college after high school, the gaps based on income level is significant.

Over the individual context, working adults' psychological expectations on college enrollment and their workplace context are critically important in that they determine to attend further education through HEIs. Desjardins and colleagues (2006) and Adamuti-Trache and Schuetze (2009) found that most adults strongly have job/career-related motivation to participate in adult training/education or continuing education. Moreover, regarding workplace context-related factors, part-time workers were more likely to participate in HEIs than full-time employees (Chao, Derocco, & Flynn, 2007), and occupation types that require cognitive or technology skills were positively associated with working adults' participation in continuing education (Desjardins et al. 2006). Adults who work in labor-intensive occupations ended up having less opportunity to access HEIs due to the nature of their occupations. In similar, income level, work flexibility, and financial support from the workplace were significant factors explaining working adults' baccalaureate or higher degree-seeking behavior (Price & Bell, 2008).

Understanding "Work-Related Learning" of Working Adults

Learning theories highlight the different approaches to understanding the adult population. Jarvis (2010) contributes to understanding how work-related learning can be classified: formal and informal learning. Formal learning is defined as "to the highly institutionalized, chronologically graded and hierarchically structured 'education system,' spanning lower primary school and the upper reaches of the university" (Coombs & Ahmed, 1974, p. 8 as cited in Boeren, 2011, p. 334) or the "organized settings leading to official degrees and credits refer to formal education" (Boeren, 2011, p. 335). Jarvis (2010, p. 42) provides a similar definition as formal learning is "formal education and training that occurs in an educational institution and any other bureaucratic organization," which includes short- or long-term certificates or degrees provided by colleges or universities. Informal learning is described as the "natural accumulation of knowledge and skills in daily life, often unorganized and incidental" (Rosers, 2004 as cited in Boeren, 2011, p. 335). For example, "learning by conversations with family, friends and colleagues, by using printed materials, by using computers, through television, radio and video, by guided tours, e.g., in museums, and by visiting learning centres, e.g., libraries" (Boeren, 2011, p. 335).

This concept in regards to work-related learning has potential implications for explaining working adults' delayed college enrollment as it demonstrates the process of knowledge

acquisition and behavioral changes. According to Maurer et al. (2003), once adults perceived the benefits of work-related learning, they were more likely to engage in actual learning. Thus, perceived benefits for career development or beliefs about favorable desired outcomes will result from the individual commitment to work-related learning experiences. Identifying dynamics among individual, workplace, and work-related learning factors, therefore, can provide insights to comprehensively understand how different contexts influence working adults' HEIs participation.

Conceptual Framework

To address the purpose of the study, we applied a model proposed by Boeren and colleagues (2010). Boeren et al. (2010) explain that the decision to participate in adult education occurs through interacting with three layers' context: micro, meso, and macro. Boeren et al.'s model presents that individuals (micro-level) and educational institutions (meso level) are embedded in society (macro-level). While this model provides a comprehensive picture of explaining adult learning participation, it has a limitation in aggregating a wide range of micro-level factors into one category. Thus, this study reorganizes the model of Boeren et al. (2010) in a way to emphasize the individual context and learning.

As an initial study of operationalizing the framework, this model only focuses on how the individual context (micro-level) influences the decision to enroll in degree programs in HEIs. What differences from Boren et al.'s (2010) model are they assume interactive influence between individuals and institutions. In our study, how institutions influence employees' decisions is not the scope of interest. Moreover, our model incorporates 'learning' in the model. We assume that employees' learning experiences can be influenced by both the individual context (e.g., workplace conditions) and broader social context (e.g., government or industry support for work-related learning). All in all, employees' decision to enroll in college degree programs can be influenced by different types of individual contexts, which is not separate from the broader society.

METHODOLOGY

Data Source

The data is drawn from the Program for the International Assessment of Adult Competencies (PIAAC), which is a large-scale comparative survey that was conducted and developed by the Organization for Economic Cooperation and Development. From 2011 and 2015, more than thirty countries participated in this survey. We used U.S. PIAAC data collected in 2012 and 2014. PIAAC is designed to measure key cognitive skills and competencies and educational and workplace experiences of the adult population aged from 16 to 65 that underlie individuals' labor market outcomes and social success. Given that this study primarily focused on work-related learning experiences, PIAAC provides useful information including personal backgrounds, workplace conditions, and various types of learning experiences at the workplace (i.e., formal/informal learning). This information allows us to examine how different contexts influence the college access of working adults who entered the workforce after graduating high school.

Sample

Our sample included the 1,968 respondents who had recent work experience with a high school diploma. The sample for this study was selected based on the following criteria. First, individuals who are currently working in the labor market or who have recent work experience in the last 12 months were selected while excluding those who have no work experience. Second, individuals who have a high school diploma and have no enrollment experience in HEIs were included. These selection criteria are well aligned with the definition of working adults in this study, which was to examine how individual, workplace, and work-related learning contexts influence the decision to attend HEIs.

Variables

Dependent variable

The dependent variable was polytomous, indicating three statuses on whether a respondent enrolled in a postsecondary degree or certificate programs at HEIs: no higher education enrollment ($n = 930$), enrolled in a sub-baccalaureate degree program ($n = 668$), and enrolled in a baccalaureate degree program ($n = 370$).

Independent variables

Independent variables reflect the purpose of this study to see if working adults' individual, workplace, and work-related learning contexts influence their decision to enroll in HEIs: personal background (gender, age, race, and having a dependent), workplace condition (occupation type, work intensity, work flexibility, and monthly income), and formal and informal learning experiences for job-related reasons. Formal learning included distance learning, on-the-job training, seminars/workshops, and other private learning experiences. Informal learning referred to learning from supervisors/colleagues, learning-by-doing from the tasks, and learning through keeping up-to-date with new products.

Analytic Strategy

We conducted a multinomial logistic regression analysis using the SPSS version 26.0 to examine how each individual, workplace, and learning context is associated with working adults' enrollment in HEIs. A multinomial logistic regression analysis allowed us to examine the likelihood of membership of the dependent variable that includes three categories: no college enrollment (the baseline comparison outcome), sub-baccalaureate degree program enrollment, and baccalaureate degree program enrollment.

FINDINGS

Influential Factors of Working Adults' Sub-Baccalaureate Degree-Seeking

Table 1 includes the results of a multinomial logistic regression analysis. Among working adults who have a high school diploma, men were less likely than women to seek a sub-baccalaureate degree by 29%. For one unit increase in the age category (10 years), the odds of enrolling in a sub-baccalaureate program decreased by 28%. The occupational type was significantly associated with participating HEIs; compared to respondents working in the labor field, the odds of enrolling in sub-baccalaureate degree was 53% and 41% higher for those who have professional and sales/management jobs, respectively. The odds of enrolling in a sub-baccalaureate degree program decreased by 37% for respondents with part-time jobs.

Both work flexibility and monthly income had positive relationships with sub-baccalaureate degree-seeking. Regarding learning experiences, respondents who had distance education and private lesson experience were more likely to pursue a sub-baccalaureate degree, as odds of pursuing a sub-baccalaureate degree at HEIs were increased by 119% and 65%, respectively. When a respondent experienced learning through supervisors/colleagues, the odds of enrollment in the sub-baccalaureate program lowered by 9%.

Influential Factors of Working Adults' Baccalaureate Degree-Seeking

When looking at the enrollment in a baccalaureate degree program, older working adults were less likely to attend HEIs pursuing a baccalaureate degree, as odds ratio decreased by 25% for one unit increase in the age category. Based on race/ethnicity, respondents who are included in other races group (i.e., Asian, Pacific islanders) were more likely to attend a baccalaureate degree program in HEIs by 103%, compared to the White race. Respondents who have a dependent(s) were more likely to pursue baccalaureate degree-seeking by 183%. The odds of enrolling in a baccalaureate degree program increased by 133% for respondents working in professional jobs compared to those in the labor field. The odds of seeking a baccalaureate degree at HEIs decreased by 48% for respondents who have part-time jobs. Workplace flexibility increased the odds of baccalaureate degree-seeking by 20%. Concerning work-related learning experiences, distance education, seminar/workshop, and private lesson experiences were significantly positively associated with baccalaureate degree-seeking. When a respondent had learned through supervisors or colleagues, the odds of enrolling in a baccalaureate degree decreased by 15%. Learning-by-doing increased the odds of pursuing a baccalaureate degree by 13%.

Table 1. Results of Multinomial Logistic Regression Analysis

Items	Scale	Sub-baccalaureate Degree (ref.=No degree)			Baccalaureate Degree (ref.=No degree)		
		coef.	Std. Err.	OR	coef.	Std. Err.	OR
Individual Context							
Sex	(1=male; 0=female)	-0.34	0.12	0.71**	0.1	0.15	
Age	(1=24 or less to 6=more than 55)	-0.33	0.05	0.72***	-0.28	0.06	0.75***
Race (ref.=White)							
Hispanic	(1=yes; 0=no)	0.07	0.16		-0.07	0.21	
Black	(1=yes; 0=no)	-0.05	0.15		-0.14	0.2	
Other	(1=yes; 0=no)	0.19	0.26		0.71	0.29	2.03*
Have a dependent	(1=yes; 0=no)	0.19	0.13		1.04	0.16	2.83***
Workplace Context							
Occupational type (ref.=Labor)							
Professional	(1=yes; 0=no)	0.43	0.15	1.53**	0.85	0.19	2.33***
Sales/management	(1=yes; 0=no)	0.35	0.15	1.41*	0.34	0.2	
Full-time	(1=yes; 0=no)	-0.45	0.15	0.63**	-0.65	0.18	0.52***
Work Flexibility		0.13	0.06	1.14*	0.18	0.08	1.20*
Monthly income percentile rank	(1=less than 10% to 6=90% or higher)	0.14	0.06	1.15*	0.05	0.08	
Learning Context							
<i>Formal learning</i>							
Open or distance education	(1=yes; 0=no)	0.78	0.17	2.19***	0.92	0.19	2.50***
On-the-job training	(1=yes; 0=no)	0.07	0.12		0.05	0.15	
Seminars or workshops	(1=yes; 0=no)	0.13	0.13		0.41	0.16	1.51*
Private learning (e.g., tutoring)	(1=yes; 0=no)	0.5	0.24	1.65*	0.98	0.26	2.67***
<i>Informal learning at the workplace</i>							
Learning from coworkers/supervisors	(1=yes; 0=no)	-0.09	0.05	0.91+	-0.17	0.06	0.85**
Learning-by-doing	(1=yes; 0=no)	0.02	0.05		0.12	0.06	1.13+
Keeping up to date	(1=yes; 0=no)	0.07	0.04		-0.05	0.05	
cons		-0.07	0.43		-1.85	0.54	

***p<.001, **p<.01, *p<.05, +p<.10

DISCUSSION AND CONCLUSIONS

The findings of this study provide empirical evidence on how individual, workplace, and work-related learning contexts influence college access of working adults who entered the workforce after graduating high school. The study focused on exploring different types of workplace learning experiences (i.e., formal/informal learning), which have been largely discussed as an important concept in the adult and continuing education field.

Considering the level of educational attainment closely related to further opportunities for career development and personal well-being, the findings provide both scholarly and practical implications. First, the findings highlight the importance of workplace contexts in degree-seeking at HEIs. It is important to note that building a supportive working environment that ensures workplace flexibility and autonomy of employees promotes working adults' access to higher education (Price & Bell, 2008). This result reiterates the importance of workplace contexts that increase flexibility in work organization facilitates the educational attainment or experiences of adults (Desjardins et al., 2006).

Secondly, the significance of this study is to reveal the influence of work-related learning to working adults' decision to enroll in HEIs. As Maurer, Weiss, and Barbeite (2003) demonstrated, learning experiences in the workplace are significant to lead employees to engage in further education opportunities. Not surprisingly, many studies provide consensus on the importance of learning experiences to formal and less-formal learning activities (Hurtz & Williams, 2009; Maurer et al., 2003) that may motivate working adults to pursue further education at HEIs for career/personal development.

In conclusion, this study can be a significant addition to existing theories and research as it provides empirical evidence of the dynamics across diverse types of learning experiences that the adult population encounters in and out of the workplace. Considering that employees' learning and skill may return to their workplace, this study provides supportive evidence that workplace learning, in conjunction with workplace support, can facilitate working adults' further education opportunities and career advancement.

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