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Entrepreneurs' Learning Skills and Strategies as Represented in the PIAAC Survey Empirical Research

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Abstract: This study examined learning-skills and behaviors of self-employed individuals using the PIAAC survey. Results indicate entrepreneurs use influence, negotiation skills, and apply new ideas to real-life situations more than employees.

Keywords: PIAAC, entrepreneurship, social justice, progressive adult education

Adult education is a diverse and interdisciplinary field with a strong social justice orientation uniquely positioned to collaborate with entrepreneur and community educators. Entrepreneur and social justice education efforts prepare learners to not only consider individual profit attainment but also align behaviors with the broader social impact. Social entrepreneurship is an increasingly popular phenomenon "of creating social value by providing solutions to social problems" (M. Dacin, P. Dacin, & Tracey, 2011, p. 1204). This trend is particularly visible in developing and emerging economies (Warner, Lieberman & Roussos, 2016). Typically, market value is prioritized above social value but social entrepreneurship suggests the reverse. Collaboration enhances the future of individuals and communities to develop socially engaged entrepreneurs (Knox & Fleming, 2010; Bierema, 2010). While entrepreneur learning and evaluation is discussed in existing entrepreneur education literature, the current views and focus of entrepreneur education and learning are concentrated in institutions of higher education. Additionally, entrepreneurs are studied and understood in current literature through a Western lens which excludes immigrant, ethnic, or minority entrepreneurs (Fayolle, 2013).

Purpose

Thus, the purpose of this study is to move from a Western, institutional understanding of entrepreneur education to the learning and skills utilized by entrepreneurs or self-employed individuals within communities through a social justice framework. Though some aspects of learning in these settings are transferable, there are limitations to viewing entrepreneur education exclusively in institutional settings. Through the PIAAC dataset, we investigated the connections among the skills people apply at work, activities in their daily lives, and their employment status, emphasizing the learning and knowledge associated with entrepreneurship and self-employment. The two research questions for this study are: (1) Is there a difference in skills' use at home or at work between people who are employed and self-employed? (2) What is the relationship between learning strategies and employment status, controlling for gender, education level, and time since immigration?

Theoretical Framework

Entrepreneurialism and education are social systems. Social justice is not, however, evident in entrepreneur literature except in the form of social entrepreneurship. Social Justice theory asserts that social systems are dynamic and social relationships can be enhanced and improved (Banks, 2008; Baldwin, Buchanan, & Rudisill, 2007). Guba and Lincoln (1994) assert that a social justice framework helps explore social reality and how "social, political, cultural, economic, and gender values crystalize over time" (p. 106). We apply this framework to explore the skills used by entrepreneurs and employees within the US.

Methodology

The PIAAC dataset was generated by the Organization for Economic Cooperation and Development (OECD, 2016) through a survey of adult skills. Conducted in 33 countries, the PIAAC survey is a skills-based assessment of respondents' proficiencies in literacy, numeracy, and problem solving in technology-rich environments. It also includes demographic background data such as family characteristics, work and educational history, and engagement in learning activities. To address the previously stated research questions, this study analyzed the 2012-2014 United States PIAAC Household Survey data.

Participants. There are 8,670 respondents in the U.S. PIAAC data set (OECD, 2016b). All respondents were between 16 and 74 years old and women comprised approximately 55% of respondents. Regarding educational attainment, a high school diploma or equivalent was the most common, at about 41%. For RQ1, respondents numbered between 4,110-4,118 employed people and 699-700 self-employed people with the exception of 207 self-employed people who responded to the item regarding Time cooperating with co-workers. The difference in respondents' participation in this question could be explained by self-employed individuals not necessarily interacting with co-workers. There were 627 respondents with 531 employees and 96 self-employed.

Analysis. For RQ1, we performed a series of *t*-tests of independent samples between the employed and self-employed responses. We found there were significant differences between the two groups for the following skills: Sharing work-related info, Teaching people, Presentations, Advising people, Influencing people, Negotiating with people, problem solving - simple problems, problem solving - complex problems, Skill use work - working physically for a long period. No other significant differences were found.

For RQ2, we applied a linear regression model for each learning strategy (and Year of Immigration). The survey question for this learning strategy was "When I hear or read about new ideas, I try to relate them to real life situations to which they might apply" (OECD, 2009, question I_Q04b). The learning strategy variables had five values along a frequency scale from 1 to 5. This research question was addressed using the following base model.

$$\text{Learning Strategy} = \beta_0 + \beta_1 \text{SelfEmp} + \beta_2 \text{GENDER} + \beta_3 \text{EDUC} + \text{Residual}$$

All PIAAC items analyzed in RQ1 and RQ2 had five values along a frequency scale from 1 to 5. Possible responses ranged from not at all (1) to a very high extent (5).

Results

The first research question concerned the relationships between skills' use at work between self-employed people and employed people. Self-employed individuals used their influence and negotiation skills along with working physically for long periods of time more than employees. Employees did more presenting, advising others, and solving simple and complex problems. These differences are indicative of the nature of work required of employees and self-employed individuals as depicted in table 1.

Table 1.

Means and Differences of Skill Use Between Employed and Self-Employed

Skill Use	Employment	<i>M</i>	<i>SD</i>	Difference	95% CI of Difference	
					Lower	Upper
Time cooperating with co-workers	Employee	3.76	1.35	0.25	0.06	0.44
	Self-employed	3.51	1.39			
	Employee	4.34	1.15	1.43**	1.29	1.56

How often - Sharing work-	Self-employed	2.91	1.77			
How often - Teaching people	Employee	3.17	1.49	0.55**	0.42	0.68
	Self-employed	2.63	1.62			
How often - Presentations	Employee	2.00	1.32	0.25**	0.15	0.35
	Self-employed	1.75	1.20			
How often - Selling	Employee	2.26	1.74	-0.62*	-0.76	-0.48
	Self-employed	2.88	1.74			
How often - Advising people	Employee	3.75	1.49	0.22*	0.10	0.34
	Self-employed	3.53	1.53			
How often - Influencing people	Employee	3.30	1.71	-0.13**	-0.26	0.01
	Self-employed	3.43	1.64			
How often - Negotiating with people	Employee	2.87	1.73	-0.35**	-0.48	-0.22
	Self-employed	3.22	1.61			
Problem solving - Simple problems	Employee	4.19	1.16	0.22*	0.12	0.31
	Self-employed	3.97	1.25			
Problem solving - Complex problems	Employee	3.09	1.34	0.16*	0.06	0.27
	Self-employed	2.93	1.27			
How often - Working physically for a long period	Employee	3.42	1.74	-0.16**	-0.29	-0.02
	Self-employed	3.58	1.62			
How often - Using skill or accuracy with hands or fingers	Employee	4.41	1.29	0.06	-0.05	0.16
	Self-employed	4.35	1.27			

Note. * $p < 0.05$. ** $p < 0.01$.

Research Question 2

The second research question focused on the relationships between the two employee groups (self-employed and employed) and their learning strategies while also comparing other sociodemographic factors of immigration, gender, and education. Table 2. includes the results for these questions by learning strategy. Each learning strategy and the results are discussed below. Table 2.

Means and Differences of Skill Use Between Employed and Self-Employed

Strategy	Year of Immigration	b_i	Self-employed	Female	More than HS	Bachelor's or higher
Real Life	1931-1960	3.66	0.74*	0.07	-1.19*	0.64
	1961-1990	2.65	0.15	-0.14	0.53	1.16*
	1991 or later	2.55	0.39*	-0.08	0.51*	0.98*
New Things	1931-1960	3.11	1.32*	.40	-0.13	0.95
	1961-1990	3.81	0.01	-0.12	0.30	0.68*
	1991 or later	3.78	0.24*	0.07	0.39*	0.47*
Something New	1931-1960	3.10	1.28*	0.83*	-0.81	0.03

	1961-1990	3.32	-0.11	-0.07	0.35	0.83*
	1991 or later	3.19	0.14	-0.02	0.50*	0.72*
Difficult Things	1931-1960	3.16	1.17*	0.72*	-1.02*	-0.36
	1961-1990	3.40	-0.11	0.02	0.39*	0.74*
	1991 or later	3.55	0.19	-0.16	0.21	0.42*
Ideas Fit	1931-1960	3.22	1.17*	0.72	-0.90	0.87
	1961-1990	3.26	0.18	-0.33*	0.56*	0.93*
	1991 or later	3.27	0.45*	-0.13	0.50*	0.68*
Additional Info	1931-1960	4.01	0.36	-0.03	-0.45	0.31
	1961-1990	3.81	-0.13	0.07	0.29	0.44
	1991 or later	3.70	0.15	0.00	0.40*	0.54*

Note. * $p < 0.05$.

The results for the following questions are discussed according to skill use. Each skill use question is provided below and the significant results are discussed.

Real Life. The survey question for this learning strategy was “When I hear or read about new ideas, I try to relate them to real life situations to which they might apply” (OECD, 2009, question I_Q04b). Among the significant results the analysis found that self-employed reported higher engagement regarding real life situations than employed people in the earliest and latest immigration groups. Education level, a control variable, was also shown to be positively related to real life engagement for those with a Bachelor’s degree or more in the two latest immigration groups.

New Things. The survey question for this learning strategy was “I like learning new things” (OECD, 2009, question I_Q04d). Analysis found that self-employed reported higher engagement regarding learning new things than employed people in the earliest and latest immigration groups among the significant results. Also shown, learning new things is positively related to Education level, a control variable, for those with a Bachelor’s degree or more in the two latest immigration groups.

Something New. The survey question for this learning strategy was “When I come across something new, I try to relate it to what I already know” (OECD, 2009, question I_Q04h). Self-employed, women reported higher engagement regarding relating new information to existing knowledge than employed men in the earliest immigration group. While relating new information to existing knowledge is positively related to Education level, a control variable, for those with a Bachelor’s degree or more in the two latest immigration groups.

Difficult Things. The survey question for this learning strategy was “I like to get to the bottom of difficult things” (OECD, 2009, question I_Q04j). Getting to the bottom of difficult things is reported among the significant result for the earliest groups of immigrants who are self-employed and women. While getting to the bottom of difficult things is positively related to Education level for those with a Bachelor’s degree or more in the latest immigration group.

Ideas Fit. The survey question for this learning strategy was “I like to figure out how different ideas fit together” (OECD, 2009, question I_Q04l). Self-employment for the earliest and latest immigration group is significant. Gender and education for the middle immigration group are among the significant results for figuring out how different ideas fit together.

Additional Information. The survey question for this learning strategy was “If I don't understand something, I look for additional information to make it clearer” (OECD, 2009, question I_Q04m). Education level, a control variable, is shown to be positively related to looking for more information to make things clearer for those with a HS degree or more in the latest immigration group.

Discussion, Implications, and Conclusions

Entrepreneurship encompasses a broad spectrum of types of activities, ranging from small businesses to hi-tech and electronic commerce, and includes individuals from all walks of life. The common thread is described by Constant and Yochanan (2006) as an attitude to undertake risk, make one's own decisions, be creative and responsible, and enjoy a sense of independence. This version of the entrepreneur story aligns with a progressive adult education philosophy of shared growth and development through individual contributions and experience (Dewey, 1977). For the first research question, self-employed individuals used their influence and negotiation skills along with working physically for long periods of time more than individuals who are employees. As discussed, social entrepreneurship is increasingly popular yet entrepreneurship within the data is not divided between social and economic necessity. Typically, market value is prioritized above social value but social entrepreneurship suggests the reverse. Collaboration enhances the future of individuals and communities to develop socially engaged entrepreneurs (Knox & Fleming, 2010; Bierema, 2010). Influence and negotiation skills are social and happen within communities.

Within communities and social spheres for entrepreneurs, hard work and individual efforts stand out as entrepreneurial characteristics. Employees, as evidenced in our results did more presenting, advising others, and solving simple and complex problems. These differences are likely indicative of the nature of work required of employees and self-employed individuals. While employees work within communities as well, their direct livelihood is less dependent on the overall ability to work long and hard hours.

The second research question identified the learning strategies used based on sociodemographic factors between employees and self-employed individuals. Education level, a control variable, is also shown to be positively related in skill use for the latest immigration group regardless of employment status. Education matters more than Gender for more recent immigrants in the US in general regardless of employment status. Immigration is particularly evident in the significant results of the skills use questions that relating to using real life examples and figuring out how to make different ideas fit together.

Immigration status and employment opportunities are key factors in understanding skills and education that people need for different types of work. Immigrants from South America have lower education levels and language proficiency. Fairlie and Woodruff (2010) identify a gap between Mexican immigrants and non-Latino whites starting a new business because of low education and wealth levels, English language ability and legal status. These challenges however are diminished with second and third-generation Mexican-Americans and this is also identified in our findings. With future generations, the challenges faced by immigrant entrepreneurs may be reduced because of access to education and growing up in the US cultural context.

The context of immigration and skills used to be self-employed are evident in this study's results. These are possible outcomes of progressive education (Dewey, 1977) and an orientation towards social entrepreneurship that engages communities. From RQ1's results, time spent influencing and negotiating with others, and from RQ2's results, the applications of new ideas and connection of skills use to real life are indicators of the entrepreneurs' skills in connection to

their contexts. As entrepreneurs are necessarily highly connected to their client bases and communities (Hussain, Scott, & Matlay, 2010), it is likely the applications of new learning to real life have direct ties to those around them, thus indicating social value.

This study shows self-employed people use influencing and negotiation skills more than employees. Further, self-employed individuals also apply new ideas to real life situations more than employees. These results have implications for U.S. adult education research, practice and policy in supporting adult learners who are self-employed, particularly those who are self-employed immigrants. As the self-employed and immigrants are populations rarely supported through traditional education systems, adult education scholars and practitioners should further examine the ways that self-employed immigrant learners are supported by their communities and inform the programming offered by small business development centers, community colleges, and workforce development programs.

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