



## Results Call for Proposals Fall 2016

---

### Huacong Liu



Huacong Liu is a PhD student in the Department of Education Policy Studies at the Pennsylvania State University. She researches the economics of higher education and related issues. Her current work involves topics such as educational mismatch, with a cross-country perspective; race-conscious admissions policies in the United States and student body diversity; and skill formation across education systems, with a focus on the contrast between the United States and Germany. She sees these topics as tackling different aspects of educational inequality. She will receive her doctorate in higher education with a focus on economics of education from the Pennsylvania State University in August 2017.

### Fellowship project:

Huacong's research project seeks to evaluate whether different countries' educational systems are effective in supplying national labour markets with graduates who have sufficient numeracy and literacy skills, as well as the capacity to manage information and solve problems in a technologically advanced environment. In particular, the project will examine the ways in which national educational systems track students and balance instruction between general and specific skills. These topics are gaining increased attention from policymakers, economists, sociologists, and educational researchers in an increasingly global and competitive economy (OECD, 2016).

Existing literature tends to suggest that while vocational education facilitates and improves immediate study-work transition, it may hurt an individual's long-term employment and earnings (Brunello & Rocco, 2015; Hanushek, Woessmann & Zhang, 2011; Wolter & Ryan, 2011). Additionally, some scholars argue that tracked educational systems preserve or magnify social inequalities because school facilities are often better for students in the higher tracks (Brunello & Checchi, 2007). However, there are few empirical studies that examine varying relationships between education system orientations at a country level and skill accumulation at an individual level.

Using data from the Programme for the International Assessment of Adult Competencies (PIAAC), Huacong's proposed study will use OLS regression with country fixed effects to examine and compare how effective different education systems are in improving individuals' general skills across OECD countries. Understanding these relationships is highly relevant and timely at a time when countries such as Germany faces push for standard national curricula and a move toward a less segregated system to

replace the traditional strict tracking and vocationally-oriented system. In contrast to Germany, the public in the U.S. is looking to orient education in more practical directions. In initiating any education reform, policymakers need a better understanding of how education system characteristics such as early tracking and vocational orientation of curriculum influence individuals' accumulation of general skills. The results of this study will provide quantitative evidence to inform policy debates.

---

## Qiwei He



Qiwei He is a Research Scientist for the Center for Global Assessment at Educational Testing Service (ETS), where she helps oversee projects in international large-scale assessments. Her work has developed scientific principles to better understand innovative item types such as the interactive scenario-based and collaborative problem solving items used in PISA and PIAAC. Recently, together with Columbia University colleagues, she won a four-year grant from the National Science Foundation. She will be the principal investigator in developing latent and graphical models for complex dependent data in education. She received her Ph.D. in Psychometrics and Data Analysis from the University of Twente, Netherlands, in 2013. Her dissertation on “Text Mining and IRT for Psychiatric and Psychological Assessment” won the 2013 Abbas Dissertation Award from Netherlands and the 2017 Anne Anastasi Dissertation Award from American Psychological Association, Division 5 (Quantitative and Qualitative

Methods). The innovative nature of her research has received other recognition, including the 2017 Alicia Cascallar NCME (National Council of Measurement in Education) Award for an Outstanding Paper by an Early Career Scholar.

### Fellowship project:

Adult assessments have evolved to keep pace with the changing nature of adult literacy and learning demands. With the growing importance of information and communication technologies (ICT), measures of ICT literacy skills, digital reading, and problem solving in technology-rich environments (PSTRE) are increasingly important topics for exploration through computer-based assessment.



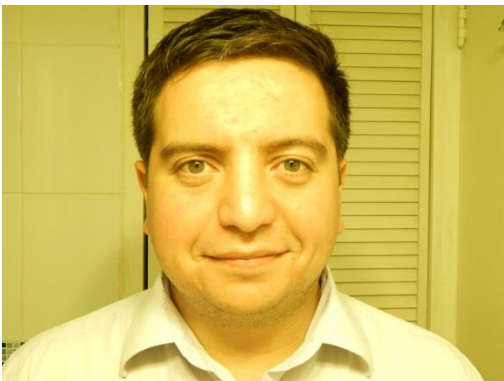
The use of computers as the delivery platform enables data collection not just on whether respondents are able to solve the tasks but how they approach the solution and how much time their efforts take. This additional information helps us understand the strategies that underlie proficient performance. By analysing the process data produced by adults in different performance groups and countries, we are able to obtain insights into how these sequences of actions are associated with different ways of cognitive processing and to identify key actions that lead to success or failure.

This project will use process data collected in log files from PIAAC as well as existing data from the assessment to identify predictors from background variables as along with key features generated from the process data. This project aims at (1) exploring a solution to generalize the action patterns across multiple items rather than relying on individual features specific to a particular task, (2) extracting sequence patterns (i.e., mini-sequences) from process data with data mining techniques, and (3) adding background variables as additional features in identifying malleable factors associated with adults' digital literacy and problem-solving proficiency.

This project will not only yield advances in methodology for others to use in the future but also help discover insights into the strategies differentiating between high and low proficiency in adults' performance in PSTRE and digital literacy. This will be of importance for policymakers from different countries to better understand the strategies that adults use to solve digital problems, hence finding better solutions to support adults' training in order to enhance their problem-solving skills.

---

## Jaime Balladares



Jaime Balladares is a Psychologist and MA in Educational Psychology from Pontifical Catholic University of Chile. Currently, he is finishing his PhD studies at the Department of Psychology and Human Development, in UCL Institute of Education, London, UK. In the last years, Jaime have conducted a longitudinal study about reading predictors in a sample of children from low and high socioeconomic backgrounds at ages 5 and 7. His work focused primarily on early childhood and the effect of socioeconomic status on skill development in disadvantaged groups. In the past, the

author participated in several projects related to learning processes, school management and creation of standards for school libraries, among others. Jaime has lectured courses in Psychology of Development and Psychology of Learning for students of pedagogy.



## Fellowship project:

Academic achievement differences are strongly associated to the socioeconomic environment where a child develops. These inequities start in early years and tend to be wider in primary and secondary education. Developing policies in the early years to reduce the gaps between children from different socioeconomic backgrounds is becoming increasingly urgent.

The impact of early child education on later academic achievement has been widely proved. Children that regularly attend preschool show better cognitive, social, language and literacy skills than their peers who have not. In turn, children from low socioeconomic backgrounds rarely attend preschool in comparison to their peers from high socioeconomic backgrounds. This is due to several reasons, such as mistrust or lack of money, among others. Thus, evaluating the specific impact of pre-school education on children from low socioeconomic status in countries with unequal income is becoming an important topic for the governments.

This study aims to analyse several preschool-related features on PISA results, using nested analysis in which country and school features and family socioeconomic backgrounds are considered. The focus will be based on those students from low socioeconomic backgrounds, to find preschool-related factors that can mitigate the effect of deprived backgrounds on later academic achievement.

The results of the study aim to contribute in designing better educational policies in early childhood, particularly in those countries with a high proportion of students from low socioeconomic backgrounds or highly segregated.