

Social Origin, Education, Occupation and the Effect of Cognitive and Non-Scholastic Skills

¹Valeria Breuker, ²Hans Schadee, ³Gabriele Ballarino
University of Milan

¹ valeria.breuker@unimi.it; ² henri.schadee@unimi.it ³gabriele.ballarino@unimi.it

The paper studies the factor analytic structure of 43 competences (skills) in 21 western countries. Three different domains are distinguished: literacy numeracy and non-scholastic skills (PIAAC 2013). Eleven skill factors are defined. The analysis relates (background) education, parental education, gender, age to skills and the impact of these on occupation and income (destination).

Stratification studies show considerable impact of social background on destination, even when controlling for education (Blau & Duncan, 1967; Erikson & Jonsson, 1998, Hällsten, 2013; Bernardi & Ballarino, 2016). There is considerable evidence these relations have weakened in the last few decades (Shavit & Blossfeld, 1993; Breen & Jonson, 1998). Various authors distinguished 5 mechanisms of direct effect of social origin on destination, one of these is the difference in productivity (Erikson & Jonsson, 1998; Hällsten, 2013; Bernardi & Ballarino, 2016). The mechanism refers to skills required in an occupational career; these competences are strongly related to social origin and attained education according to Heckman (Heckman et.al. 2006; 2013). This mechanism involves the competences during the occupational career.

Moreover, modernization theory claims industrial economies will converge to the same model. This study analyzes whether there is such a convergence of the factorial structure of cognitive and non-cognitive skills in the 21 countries analyzing 43 competences. In general we hypothesize that skills can compensate both a low social origin and/or low educational attainment, in determining the occupational destination. Secondly we hypothesize positive correlations of education with the skills.

2. Data and methods

We use the first wave (2013) of PIAAC data for 21 western countries. The focus is on individuals between 16 and 65 years of age (total N= 48491), and considers two dependent variables: occupation (isco 1 digit) and income. The independent variables are 43 cognitive and not cognitive skill variables grouped in 3 domains: literacy, numeracy and non-cognitive, controlling for education of the respondent, parental education, age in five cohorts, country and gender. Explorative factor analysis of the 43 skill variables gave 11 factors (5 non-cognitive skills, 2 literacy skills and 4 numeracy skills) in each country, with each variable loading only on one factor (congeneric) except for one variable with two loadings. Successively the domains were merged and 6 exogenous observed variables added to the model.

The core of the model is configurational; however to deal with country variation we allowed three correlated errors potentially varying by country (see table in text). Single country models are acceptable with RMSEA between .05 and .06. The links of parental education, education, gender, age, income and Isco to the 11 competences factors are estimated for the fully standardized models.

3. Results

As already mentioned the structural model of competences is configurational for all the countries with the three correlated errors. Configurational similarity is at most an intermediate form of convergence, so the status of such claims remains somewhat indeterminate.

In the model the relations of education and parental education (background) with most of the skills, except for some of non-cognitive skills, is weak contrary to the second hypothesis. However, both cognitive and non-cognitive skills have a strong effect on occupation and income (destination). An analysis dividing the sample divided by age (under 35, above 35; threshold chosen to have sufficient cases for all countries) arguing that older respondents, having had their education earlier, could have weaker correlations of education with the skill factors than younger correspondents. This is not the case, putting the second hypothesis in doubt.

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