Empirical Research

The role of skills, competencies and behaviour in determining short and long term outcomes: A literature review

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THE ROLES OF
SKILLS, COMPETENCIES AND BEHAVIOR
IN DETERMINING
SHORT AND LONG TERM OUTCOMES:
A REVIEW OF THE LITERATURE

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Why is research necessary to study NCS? In Education Policy?

- Debate about the importance of NCS for determining lifetime outcomes
  - School, labor market and social outcomes
  - Scholars, educators, policymakers, societies, teachers and parents recognize the intrinsic importance of (certain) NCS
  - Multiple disciplines at call
Why is research necessary to study NCS? In Education Policy?

- We know little about how they are nurtured (produced):
  - As CS, they are produced in school
  - As human capital constituents, incentives to invest in human-capital
- Challenges with: Identification, measurement, classification of relevant skills (within and across countries)
- Implications for education policy:
  - Need for a more comprehensive education policy reform strategy
  - Teacher training & PD, curriculum, standards, etc.
Goals and structure of the study

1. Provides a comprehensive framework for the study of empirical analysis of what education entails (education constituents)
   - Traditional cognitive skills and soft/SEL/noncognitive skills
2. Summarizes empirical studies examining relationships between education constituents and outcomes
   - School, labor market, society
3. Discusses how to integrate these skills into education policy
   - Identification and measurement (“Valid for what purpose”, Duckworth et al, 2015)
   - How to promote them
### 1. Framework: Empirical literature

<table>
<thead>
<tr>
<th>Outputs</th>
<th>School outcomes</th>
<th>Adulthood outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>NCS</td>
<td>Y</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Inputs</th>
<th>CS</th>
<th>NCS</th>
<th>X</th>
</tr>
</thead>
</table>

The table above illustrates the framework for empirical literature. The outputs are categorized into School outcomes (CS, NCS) and Adulthood outcomes (Y). The inputs are CS and NCS with X indicating no effect.
## 1. Framework: Empirical Literature

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
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<tbody>
<tr>
<td>CS</td>
<td>School outcomes</td>
</tr>
<tr>
<td>NCS</td>
<td>CS = f(X)</td>
</tr>
<tr>
<td>X</td>
<td>NCS = f(NCS, X)</td>
</tr>
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CS = f(X)  
NCS = f(X)  
CS = f(NCS, X)  
NCS = f(CS, X)  
Y = f(CS, NCS, X)
1. Framework

- Multiple layers: identification, operationalization and measurement (Inputs and Outputs)
- Classification of inputs
  - Use the OECD Education 2030 framework
    - Aggregate (for example, years of education)
    - Knowledge (knowing, i.e., math)
    - “Skills” (doing, i.e., problem solving)
    - Character (behaving, i.e., persistence)
    - Metacognition (learning to learn, i.e., reflecting)
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- Classification of outputs
  - **School** outcomes: Test scores, school attainment, graduation or dropout rates, comprehension, reading speed, etc. (Hanushek, 1986)
  - Outcomes in adulthood:
    - **Job market**: employment/unemployment, earnings
    - **Social**: health, crime, family formation, subjective well-being, life satisfaction
1. Framework

- **Measurement and instruments:**
  - (Standardized) test scores
  - Factor analysis techniques that measure underlying or latent factors (Almlund et al., 2011).
    - Taxonomies of traits: “Big Five” constructs of personality (OCEAN): Openness to experience, Conscientiousness, Extraversion, Agreeableness, Neuroticism
  - Surveys: self-assessments, teacher assessments
- **Others:** ages, countries
- [Specific to education policy: Education policy relevant noncognitive skills (Economic Policy Institute, 2014)]
2. Literature review: Findings

- Overview: Personality characteristics “may predict both academic and economic productivity” (Levin 2012)
- 4 examples of studies:
  - Looking at all the skills and most outcomes in the framework
  - Quantitative, meta-analysis, essay and cost-benefit study
  - Evidence mostly from the U.S.
  - Durlak (et al), Heckman (et al), and Levin (et al).
2. Findings-Example 1

- Durlak et al (2011)

- Multiple SEL skills: emotional awareness, self-control, conflict-resolution strategies, and interpersonal problem-solving skills
  - Improvements in academic skills. On average, participating students exhibited higher achievement, with an associated gain in performance of 1/3 of a SD, approximately constant across grades.
  - Improvements in behavior
2. Findings-Example 2

- **Heckman, Humphries, Urzua, and Veramendi (2011)**

- Cognitive ability, Noncognitive ability and SEL
  - SEL predict GPA and educational choices
  - High school and college attainment improve labor market outcomes, reduce the probability of being a daily smoker, improve physical health and mental health (depression, self-esteem), reduce the probability of being a heavy drinker and obese, increase trust, increase the probability of voting, decrease the probability of being divorced, and decrease the probability of being on welfare
2. Findings-Example 3 & 4

- Levin (2015); Levin et al., (2015)

- Adaptability:
  - Theoretical explanation of why adaptability is a goal: "more education is an investment not only in cognitive knowledge and trainability, but also in adaptability to a changing worker place" (Levin, 2015)
  - Cognitive, interpersonal and intrapersonal skills

- Returns to investments in SEL:
  - Benefit to cost ratios (of 6 interventions) are extremely large (Levin et al., 2015)
Conclusions

- Study summarizes research evidence around skills, competencies and behavior
  - Provides analytic framework to study all skills’ importance
- It highlights importance of measurement and identification for improving our understanding around human capital constituents
- Results show that constituents play different roles in the education process and in adulthood
- Further research and collaboration is necessary
  - Integrate them in the education policy agenda
  - Understand links between inputs and outputs
Thanks

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