Equal access to music education: Challenges and opportunities

Adrian Hille
Aalborg, September 24th, 2015
1. Music participation increases, but depends on social background
2. Music training potentially supports skill development
3. Policy measures can improve access to music education
Music participation increases, but depends on social background
Music participation increases, but depends on social background

**Nordic people play music more than other Europeans**

Playing a musical instrument
2007, age 15-64, in percent

Music participation increases, but depends on social background

Music is an important leisure time activity for children

Participation in music activities by age in Germany
2013, age 7-16, in percent

Source: Families in Germany (FiD) v4, own weighted estimations, n = 3887.
Music participation increases, but depends on social background

The share of musically active has been increasing

Trends in participation in music, volunteering, sports and dance
2001 to 2012, age 17, in percent

Music participation increases, but depends on social background

Participation strongly depends on social background

Music activities by gender and migration background in Germany
2013, age 6 to 16, in percent

<table>
<thead>
<tr>
<th>Gender</th>
<th>Boy</th>
<th>Girl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>19</td>
<td>30</td>
</tr>
<tr>
<td>No</td>
<td>21</td>
<td>26</td>
</tr>
</tbody>
</table>

Source: Families in Germany (FiD) v4, own weighted estimations, n = 3887.
Music participation increases, but depends on social background

Participation strongly depends on social background

Music activities by household income and parental education in Germany
2013, age 6-16, in percent

<table>
<thead>
<tr>
<th>Household income</th>
<th>Lowest quintile</th>
<th>Quintile 2</th>
<th>Quintile 3</th>
<th>Quintile 4</th>
<th>Highest quintile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ. degree</td>
<td>12</td>
<td>17</td>
<td>22</td>
<td>29</td>
<td>42</td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Families in Germany (FiD) v4, own weighted estimations, n = 3887.
Music participation increases, but depends on social background

...in Denmark as well

Music activities by parental education in Denmark
2004, age 7-15, in percent

Source: Statistics Denmark, n = 683.
Music participation increases, but depends on social background

Participation also depends on parental artistic activities

Music activities by parental artistic activities in Germany
2009-2013, age 17, in percent

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Monthly</th>
<th></th>
<th>Never</th>
<th>Monthly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending (classical) cultural events</td>
<td>7</td>
<td>39</td>
<td>Being artistically active</td>
<td>12</td>
<td>26</td>
</tr>
</tbody>
</table>

*Music weekly + music lessons outside school; Source: SOEP v29, weighted, n= 858, own estimations*
Inequality has not decreased in the last decade

Music activities by parental education in Germany: Trend 2000-2012
Age 17, in percent

- Mother's education: Neither Abitur nor university
- Mother's education: Abitur or university

Music weekly + music lessons outside school; Source: SOEP v29, weighted, n= 858, own estimations
Is inequality in access to music education a problem?

• Yes, because music is an important part of our culture
• Even more, if music training supports skill development
Music training potentially supports skill development
Musically active children obviously have better outcomes, because of their family background

### Outcome differences by between musically active and inactive adolescents

Age 17, percentage point difference

<table>
<thead>
<tr>
<th></th>
<th>Average grade</th>
<th>Conscientiousness</th>
<th>Aim university</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musically active</td>
<td>31</td>
<td>19</td>
<td>40</td>
</tr>
<tr>
<td>Inactive</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Currently taking music lessons outside school, musically active since age 8;
Source: SOEP v29, n (Average grade, aim university) = 3488, n (conscientiousness) = 1815, own estimations
Musically active children obviously have better outcomes, because of their family background.
Musically active children obviously have better outcomes, because of their family background

Outcome differences by between musically active and inactive adolescents
Age 17, percentage point difference

Currently taking music lessons outside school, musically active since age 8;
Source: SOEP v29, n (Average grade, aim university) = 3488, n (conscientiousness) = 1815, own estimations
How to solve the selection problem?

Ideal: Randomized experiment (e.g. Schellenberg 2004)
• Provides causal results,
  but might not be generalizable

Deal with non-random selection with statistical methods
• Provides generalizable results,
  but needs very detailed data
How learning a musical instrument affects the development of skills

Adrian Hille\textsuperscript{a,b,*}, Jürgen Schupp\textsuperscript{a,c}

\textsuperscript{a}German Institute for Economic Research (DIW Berlin), Socio-Economic Panel Study, Mohrenstr. 58, 10117 Berlin, Germany
\textsuperscript{b}Freie Universität Berlin and DIW Berlin Graduate Center, Berlin, Germany
\textsuperscript{c}Freie Universität Berlin and IZA, Bonn, Germany

\textbf{Abstract}

Despite numerous studies on skill development, we know little about the effects of extracurricular music activities on cognitive and non-cognitive skills. This study examines how music training during childhood and youth affects the development of cognitive skills, school grades, personality, time use and ambition using data from the German Socio-Economic Panel (SOEP).
Music training potentially supports skill development

Data: German Socio-Economic Panel (SOEP)

- Conducted by DIW Berlin
- Household survey (15000 households in 2014)
- Representative of the German population
- Annual interviews 1984 to today
- Topics:
  - labour market, education, household context
  - personality, opinions, family life, child development
- Here: Youth Questionnaire, answers from 2001-2012
- 3488 adolescents, aged 16/17
Music training potentially supports skill development

Data: German Socio-Economic Panel (SOEP)

16. Are you active in music? Do you play an instrument or pursue singing seriously?
   Yes □ □ No □ □  
   [Skip to question 20!]

17. What type of music do you make?
   Classical □ □  
   Pop / rock / techno / funk / rap / hip-hop □  
   Folk music or another type of popular music □  

17a Do you do this alone or in some sort of group?
   Alone or with a teacher in lessons □ □  
   In an orchestra or choir □ □  
   In a band □ □  
   In another type of group □ □  

18. How old were you when you started to play an instrument or pursue singing seriously?
   □ □ years old  

19. Do you take or have you ever taken music lessons outside of school?
   Yes □ □ No □ □
Variables that might determine the choice for music

- **Adolescent**: gender, birth year, firstborn, number of siblings, secondary school recommendation
- **Mother**: age, education, migration background, personality, cultural participation/activities
- **Parents**: care about school achievement, contact with school
- **Household**: income, number of books at home, apartment size, rural area, federal state
Taking selection into account: Propensity score matching

1. Determine probability to learn a musical instrument (based on observed characteristics)

<table>
<thead>
<tr>
<th>children learning an instrument</th>
<th>25%</th>
<th>30%</th>
<th>36%</th>
<th>40%</th>
<th>40%</th>
<th>42%</th>
<th>43%</th>
<th>43%</th>
<th>49%</th>
</tr>
</thead>
<tbody>
<tr>
<td>children from the control group</td>
<td>18%</td>
<td>19%</td>
<td>25%</td>
<td>26%</td>
<td>29%</td>
<td>30%</td>
<td>31%</td>
<td>36%</td>
<td>39%</td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
<td>40%</td>
<td>41%</td>
<td>42%</td>
<td>43%</td>
<td>43%</td>
<td>43%</td>
</tr>
</tbody>
</table>
Music training potentially supports skill development

Taking selection into account: Propensity score matching

1. Determine probability to learn a musical instrument (based on observed characteristics)
2. Restrict sample to comparable individuals

- Children learning an instrument:
  - 25% (18% in control group)
  - 30% (19% in control group)
  - 36% (25% in control group)
  - 40% (26% in control group)
  - 40% (29% in control group)
  - 42% (30% in control group)

- Children from the control group:
  - 25% (25% in control group)
  - 26% (29% in control group)
  - 30% (30% in control group)
  - 31% (31% in control group)
  - 36% (36% in control group)
  - 39% (39% in control group)
  - 40% (40% in control group)
  - 40% (40% in control group)
  - 41% (41% in control group)
  - 42% (42% in control group)
  - 43% (43% in control group)
  - 43% (43% in control group)
  - 49% (49% in control group)
“Music effect” not fully explained by family background

Outcome differences between musically active and inactive adolescents
With and without family background control variables, 17-year-olds

What have we learnt so far?

1. Access to music education is very unequal
2. Music is potentially beneficial for school achievement and personality development (more research needed!)
3. Adolescents from less favourable socio-economic backgrounds seem to benefit particularly

What can policymakers do?
Policy measures can improve access to music education
Governments have realised the need to act

“The coalition is committed to the goal of allowing all individuals, irrespective of their social status and ethnic origin [...] equal access to cultural participation. [...] Cultural education is indispensable for the personality development in particular of young people, their social skills, as well as for social participation.”

Source: Coalition agreement between CDU, CSU and SPD, 2013, page 90: https://www.cdu.de/sites/default/files/media/dokumente/koalitionsvertrag.pdf
Governments have realised the need to act


1. The educational package – subsidizing music school fees

• Subsidizes sports club/music school membership for poor families (10 euros/month)
• Eligibility:
  - extended unemployment benefits (after 1 year) OR
  - housing allowance OR
  - child allowance for low-income families
• Created 2011 as part of a larger policy subsidizing:
  school meals, school trips, school equipment, transportation to school, tutoring
1. The educational package – not yet a success?

Applications and take-up have increased sharply, but are still low
2012 and 2013, percent of eligible children

1. The educational package – not yet a success?

- Applications mostly from disadvantaged children: (poor education, weak language skills, long unemployment)
- Reasons for not applying:
  - complicated application procedure
  - low amount of subsidy
  - not concerned (child not member of a club)


- Only 3% of the eligible children join a club thanks to the educational package

## 2. An instrument for every child: bringing music to school

**“JeKi” in North Rhine-Westphalia: Description of the program**

<table>
<thead>
<tr>
<th>Description by Grade</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td>Basic concepts: rhythm, melody</td>
<td>Instrument lessons (small group)</td>
<td>Instrument lessons (small group)</td>
<td>Instrument lessons (small group)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Performance (end of year)</td>
<td>Performance (end of year)</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>1 extra hour per week with regular school teacher</td>
<td>1 extra hours per week with music school teacher</td>
<td>2 extra hours per week with music school teacher</td>
<td>2 extra hours per week with music school teacher</td>
</tr>
<tr>
<td><strong>Obligation</strong></td>
<td>Mandatory Participation: 100%</td>
<td>Voluntary Participation: 77%&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Voluntary Participation: 49%&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Voluntary Participation: 35%&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Costs (lessons)</strong></td>
<td>Free</td>
<td>20 €/month&lt;sup&gt;b&lt;/sup&gt; (reduction possible)</td>
<td>35 €/month&lt;sup&gt;b&lt;/sup&gt; (reduction possible)</td>
<td>35 €/month&lt;sup&gt;b&lt;/sup&gt; (reduction possible)</td>
</tr>
<tr>
<td><strong>Costs (instruments)</strong></td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
<td>Free</td>
</tr>
</tbody>
</table>

*Sources: JeKi-Stiftung (2014); JeKi-Stiftung (2013), own summary.  
<sup>a</sup>The share of participating students is taken from Busch and Kranefeld (2013).  
<sup>b</sup>100% fee reductions for welfare recipients. 14% of the participants do not pay these fees (JeKi-Stiftung, 2008).*

Policy measures can improve access to music education

2. An instrument for every child: improving access to music?

Data for North Rhine-Westphalia

- German Socio-Economic Panel: 8- to 10-year-old children
- Primary schools: address, nb of students, JeKi participation

2. An instrument for every child: improving access to music?

Evaluation method: Difference in differences

Part of the change might have occurred even without JeKi!
2. An instrument for every child: improving access to music?

Evaluation method: Difference in differences

Both areas might have been different already before the program started!
2. An instrument for every child: improving access to music?

Evaluation method: Difference in differences

<table>
<thead>
<tr>
<th>Share of children playing music (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before JeKi started</strong></td>
</tr>
<tr>
<td><strong>After JeKi started</strong></td>
</tr>
<tr>
<td>Children from JeKi areas</td>
</tr>
<tr>
<td>Change between JeKi and non-JeKi areas</td>
</tr>
<tr>
<td>Children from non-JeKi areas</td>
</tr>
</tbody>
</table>
2. An instrument for every child: improving access to music?

Evaluation method: Difference in differences

- **Children from JeKi areas**

- **Children from non-JeKi areas**

<table>
<thead>
<tr>
<th>Before JeKi started</th>
<th>After JeKi started</th>
<th>Change between JeKi and non-JeKi areas before the program started</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of children playing music (in %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before JeKi started</td>
<td></td>
<td></td>
</tr>
<tr>
<td>After JeKi started</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adrian Hille, September 24th, 2015
2. An instrument for every child: improving access to music?

Evaluation method: Difference in differences

- **Children from JeKi areas**
- **Children from non-JeKi areas**

<table>
<thead>
<tr>
<th>Share of children playing music (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before JeKi started</strong></td>
</tr>
<tr>
<td><strong>After JeKi started</strong></td>
</tr>
<tr>
<td><strong>Change between JeKi and non-JeKi areas before the program started</strong></td>
</tr>
<tr>
<td><strong>= effect of the program</strong></td>
</tr>
</tbody>
</table>
2. An instrument for every child: improving access to music?

With the introduction of the JeKi program, children play more music...
2004 to 2011, by geographic location

Policy measures can improve access to music education

2. An instrument for every child: improving access to music?

Children from poor families strongly increase their music participation

Effect of the JeKi program in percentage points by household income

Conclusion & opening discussion
Policy can make access to music education more equal

- Children have to be actively addressed/encouraged
- Drawbacks: costly, lack of quality?
- Can the same effects be achieved with alternative activities (sports, theatre, dance...)?

Is music education the right area to address inequality?

Or should we rather address this potential source of educational inequality with different measures?
Thank you very much for your attention!

Adrian Hille
German Institute for Economic Research
ahille@diw.de
http://www.diw.de/cv/en/ahille
Vielen Dank für Ihre Aufmerksamkeit.