Will Children Create Climate Change Concern among Denialists in the United States?

M. Nils Peterson¹, Danielle F. Lawson², Kathryn T. Stevenson²

¹Fisheries, Wildlife, & Conservation Biology Program, NC State University

²Department of Parks, Recreation, & Tourism Management, NC State University
Although 70% of Americans believe in climate change, only 42% believe in anthropogenic cause.

Approximately 57% do not believe climate change will personally affect them, their families, or neighborhoods.

Pew Research Center Study
Jan 7-11, 2015
CLIMATE CHANGE IS REAL.

"...we need to support leaders around the world who do not speak for the big polluters or the big corporations."

— Leonardo DiCaprio

CLIMATE CHANGE IS A PROBLEM WHICH CAN NO LONGER BE LEFT TO OUR FUTURE GENERATIONS.

POPE FRANCIS
CATHOLIC LEADER, CHEMIST

© 2015 Catholic Church England and Wales / Fawcett Co. BY-SA 2.0
Kahan et al., 2012: Increase in scientific literacy → Increase in polarization

Stevenson et al., 2014: Worldview has no effect at high levels of climate change knowledge
The Theory of Intergenerational Learning (IGL):
IGL can result in the bidirectional transfer of knowledge, attitudes and behaviors.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Knowledge</th>
<th>Attitude</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Views on Sexual Orientation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Specific Plant/Animal</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Conservation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
Does climate change education increase climate change concern among children AND their parents through child-to-parent intergenerational learning?
At least five key principles should guide efforts to promote child-to-adult IGL in EE curricula:

1) Local Issues
2) Longer term/in-depth
3) Hands-on
4) Enthusiastic Teachers
5) Encourage Parental Participation

(Lawson et al., 2018)
Wildlife, Weather, Climate & Change
A Climate Literacy Module

• Recruited 15 teachers and randomly assigned them into treatment & control groups (2016)

• Train teachers in intervention

• Weather, Wildlife, Climate, & Change Module
  • Includes service learning project
  • Long Term (year-round)
  • Local Issues
  • Encourages Parental Involvement
• Regression Predicting Parent Change in CC concern by:
  • Treatment
  • Pretest
  • Change in student CC concern
  • Demographics

• Random effects to account for family & teacher grouping

• Mediation Testing: Sobel-Goodman Analysis
Model of Results

Change in Child Climate Concern

Treatment

0.134**

Change in Parent Climate Concern

Conservative Parents

0.097*

0.157

-0.073*

0.14

0.062*

Moms

Daughters

Additional Variables:
Pretest scores***, Treatment, Child/Parent Race, Parent Political Identity, Child/Parent Sex*, Level of Family CC Discussion*, Year**
Change in climate concern as expected in control group across politics

![Graph showing change in climate concern by political ideology]
Conservatives have the biggest jump in climate concern in the treatment group.
Similar changes in climate concern between moms and dads in control group
Dads have a slightly bigger jump than moms in climate concern in treatment group.
Similar changes in climate change concern when information comes from sons vs. daughters in control group
Bigger jump in climate concern when information coming from daughters in the treatment group
• Child-to-parent IGL works in a climate change context

• Seems to overcome trends that decades of social science research on climate change perceptions have established, reaching men and conservatives and empowering girls

• Authentically engaging children is KEY
What Next?

• What comes next?
  • New ages
  • New cultures
  • New issues
    • Specific behaviors
    • Marine debris
    • Controversial wildlife
  • Continuing to build theory
Children Change Their Parents’ Minds about Climate Change

Study of students schooled on the issue showed them going on to shift their elders’ attitudes

By Lydia Denworth on May 6, 2019
### Predicting Child Climate Change Behavior

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Climate Change Discussion</td>
<td>1.070***</td>
<td>0.269</td>
</tr>
<tr>
<td>Parent Climate Change Behavior</td>
<td>0.370***</td>
<td>0.268</td>
</tr>
<tr>
<td>Child Climate Change Concern</td>
<td>0.479***</td>
<td>0.240</td>
</tr>
<tr>
<td>Parent Climate Change Concern</td>
<td>-0.037</td>
<td>-0.025</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.255</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.272</td>
<td></td>
</tr>
</tbody>
</table>

*** p < 0.001

**Control Variables:**
- Child/Parent Sex
- Child/Parent Race
- Child/Parent Political Identity
- School Rural/Urban Status
- School Title I Status
### Predicting Change in Parent Climate Concern

**Additional Variables:**
- Treatment
- Child/Parent Race
- Parent Political Identity

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest Scores</td>
<td>-0.245***</td>
<td>-0.311</td>
</tr>
<tr>
<td>Child Change in CCC</td>
<td>0.815**</td>
<td>0.140</td>
</tr>
</tbody>
</table>

#### Control Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Family CC Discussion</td>
<td>0.399*</td>
<td>0.120</td>
</tr>
<tr>
<td>Year</td>
<td>0.123**</td>
<td>0.103</td>
</tr>
<tr>
<td>Child Sex</td>
<td>0.268*</td>
<td>0.108</td>
</tr>
<tr>
<td>Parent Sex</td>
<td>-0.676*</td>
<td>-0.104</td>
</tr>
</tbody>
</table>

#### Family Dynamics Interactions

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Change in CCC*Conservative Parents</td>
<td>0.126*</td>
<td>0.097</td>
</tr>
<tr>
<td>Child Change in CCC*Parent Sex</td>
<td>-0.107*</td>
<td>-0.073</td>
</tr>
<tr>
<td>Child Change in CCC*Child Sex</td>
<td>0.238*</td>
<td>0.062</td>
</tr>
<tr>
<td>Constant</td>
<td>2.486</td>
<td></td>
</tr>
</tbody>
</table>

| N   | 289 |
| R²  | 0.297 |