Students’ Stereotypes of Mathematicians

Where do they come from?
Can they change?

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Draw your perception of a mathematician.
"Mathematicians, have:
- No friends. (Except other mathematicians)
- Not married or seeing anyone.
- Usually fat.
- Very unstylish.
- Wrinkles in forehead from thinking so hard.
- No social life whatsoever.
- 30 years old.
- A very short temper."

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7th Grade Female Student

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An International Study

- 476 seventh grade students in the US, UK, Finland, Sweden and Romania.
- In a variation of the "Draw-A-Scientist Test", students were asked to draw a picture of a mathematician at work.
- Students were asked to list reasons for why a mathematician would be hired.
- They were encouraged to comment on their drawing.
Students’ Images

• 28.8% of the drawings contained stereotypical or weird characters.

• 21.4% of all the drawings contained a character who was clearly a teacher.

• When a drawing was stereotypical and of a teacher, it didn’t represent the student’s current teacher.

• The dominant image was that of a white, middle aged, balding or wild-haired man.
Sweden—female student

Pocket protector

Light bulb

Weird hair

Mismatched socks

Trivial computations

My name is Åke!

Do you have a problem? Call me!

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Romania—female student

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US—male student

"2+2=8   I'm not smart"

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UK—male student

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Students chose to draw very small children even as they were now in their early teens.
Sweden—male student

“He is a strong mathematician. If you answer wrong he [will] KILL you.”
Finland—male student

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“I think that mathematicians always think of complicated things as obvious. This drawing has a snotty person saying, ‘Can anyone but me find the answer?’ and I dislike mathematicians.”

US—male student
Finland—female student

12. Piirrä kuva matemaatikosta työssään ja kirjoita kuvalle selitys niin, että on helppo ymmärtää mitä kuvasi tarkoitta ja kuka tai keitä ovat sen henkilöt.

1. 18 74
+ 5 03
— 3 024 058

5084 460
2 168

and the result is:

JA TULOS ON:

Hah Haah Haah Haah!

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Some conclusions...

• Students believe mathematicians do those applications they have seen in their own mathematics classes: arithmetic computation, area and perimeter, measurement.

• Media images mix with images from students’ experiences in their math classes to produce the most stereotypical images.
For all practical purposes, mathematicians are *invisible* to students of this age...
The image held of a mathematician can serve as a “kind of gatekeeper.” Henrion, 1997

Finland—male student

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7 New York City classes (179 7th graders from 3 schools)

Brainstormed 144 questions—asked in each class: What does a mathematician do?

Each drew a picture of a mathematician at work.

40, or 24.7% contained weirdos, wizards, some missing figures, and Einstein references.

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The Mathematicians Panel

5 women and 3 men ranging in age from late 20s to late 40s.

Three of the women were from countries other than the U.S.: Nigeria, England and Romania.

One of the two American women was of African descent.

Of the three men, 2 were white Americans, the third was from Wales.

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They were...

A statistician

A researcher and ethnologist interested in the mathematics to be found in games

A combinatorial biologist who studied epidemics

A network specialist for a major telecom company

A former designer of defense systems

Teachers and trainers of teachers

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The Images Change...

<table>
<thead>
<tr>
<th>Males drawing males by %</th>
<th>Males drawing females by %</th>
<th>Females drawing males</th>
<th>Females drawing females</th>
</tr>
</thead>
<tbody>
<tr>
<td>85.4</td>
<td>3.7</td>
<td>46.7</td>
<td>37.0</td>
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</tbody>
</table>

Male and female drawings by gender of pupils, before panel

<table>
<thead>
<tr>
<th>Males drawing males by %</th>
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<tbody>
<tr>
<td>86.6</td>
<td>8.5</td>
<td>34.8</td>
<td>51.1</td>
</tr>
</tbody>
</table>

Male and female drawings by gender of pupils, after panel

Please do not duplicate or distribute without permission.
Mickey's drawing (pre-panel) (post-panel)

Please do not duplicate or distribute without permission.
Maria’s drawing   (pre-panel)          (post-panel)

In the space below, and simply

Marcia’s drawing

In the space below, and simply

Marcia’s drawing

Please do not duplicate or distribute without permission.
Clara’s drawing (pre-panel)       (post-panel)

Please do not duplicate or distribute without permission.
Allie’s drawing (pre-panel)           (post-panel)

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In their own words...

“I learned that mathematicians are normal people with normal lives. What surprised me is that what they do is totally different than what I expected.” (Brittney)

“I learned that mathematicians are not only involved with numbers, [they're] involved with shapes and computers. I learned that the mathematician with the wizard’s hat is just a stereotype.” (Matthew)

“This gave a human face to mathematicians.” (Anon)

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