How to communicate effectively when faced with misinformation & myths

Bärbel Winkler - based on presentations by John Cook
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Mental Model in our Mind
Familiarity Backfire Effect

“The side effects are worse than the flu.”

The worst side effect you’re likely to get with injectable vaccine is a sore arm. The nasal mist flu vaccine might cause nasal congestion, runny nose, sore throat and cough. The risk of a rare allergic reaction is far less than the risk of severe complications from influenza.
Familiarity Backfire Effect

“The side effects are worse than the flu.”
Continued Influence Effect
Continued Influence Effect
Continued Influence Effect
Continued Influence Effect
The golden rule of debunking

Fight Sticky Myths...

...With Stickier Facts
Why Some Ideas Survive and Others Die

MADE to STICK

Chip Heath & Dan Heath

Read by Charles Kahlenberg
AN UNABRIDGED PRODUCTION

• Simple
• Unexpected
• Credible
• Concrete
• Emotional
• Story

S.U.C.C.E.S.
Usual reaction: Explain the science
Inoculation:
Also explain how the science gets distorted

Usual reaction:
Explain the science
INOCULATION THEORY

Exposure to a weak form of misinformation + Highlighting the fallacy or misconception
FACT
Replace the myth with a factual alternative that meets all the causal requirements left by the myth. Ideally, the fact is more compelling and memorable than the myth.

THE GOLDEN RULE OF DEBUNKING

Fight Sticky Myths...

...With Stickier Facts
3 ELEMENTS TO AN EFFECTIVE DEBUNKING

**FACT**
Replace the myth with a factual alternative that meets all the causal requirements left by the myth. Ideally, the fact is more compelling and memorable than the myth.

**MYTH/MISCONCEPTION**
Mentioning the myth risks a familiarity backfire effect. Here are three techniques to reduce the risk of a backfire effect:

- Emphasise the fact rather than the myth
- Warn people before mentioning the myth
- Explain the myth’s fallacy
3 ELEMENTS TO AN EFFECTIVE DEBUNKING

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FALLACY
Explain the technique used by the myth to distort the fact. This enables people to reconcile the fact with the myth.
5 CHARACTERISTICS OF SCIENCE DENIAL

F
Fake Experts
Magnified Minority

L
Logical Fallacies
Red Herring

I
Impossible Expectations
Misrepresentation

C
Cherry Picking
Jumping to Conclusions

C
Conspiracy Theories
False Dichotomy
Scientific consensus

97% of climate scientists agree on global warming
Global Warming Petition Project

31,487 American scientists have signed this petition, including 9,029 with PhDs

Petition

We urge the United States government to reject the global warming agreement that was written in Kyoto, Japan in December, 1997, and any other similar proposals. The proposed limits on greenhouse gases would harm the environment, hinder the advance of science and technology, and damage the health and welfare of mankind.

There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gases is causing or will, in the foreseeable future, cause catastrophic heating of the Earth’s atmosphere and disruption of the Earth’s climate. Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth.
Promoting “fake experts” to manufacture doubt about science

According to a recent nationwide survey:

MORE DOCTORS SMOKE CAMELS THAN ANY OTHER CIGARETTE

YOUR “T-ZONE” WILL TELL YOU...
T for Taste...
T for Throat...
that's your proving ground for any cigarette. See if Camels don't suit your “T-Zone” to a “T.”

- Not a single branch of medicine was overlooked in this nationwide survey made by three leading independent research organizations. To 115,597 doctors from Canada to Mexico, from the Atlantic to the Pacific went the query—What cigarette do you smoke, Doctor?
- The brand named most was Camel. The brand named most was Camel. Like anyone else, a doctor smokes for pleasure. He appreciates rich, full flavor and cool mildness just as any other smoker. If you don't happen to be a Camel smoker now, try Camels. Let your “T-Zone” give you the answer.

Camels Costlier Tobaccos
Promoting “fake experts” to manufacture doubt about science

Sometimes, inconvenient scientific facts threaten the interests of industry groups and organisations. For example, the scientific evidence linking smoking with lung cancer threatened the profits of the tobacco industry. Similarly, scientific evidence linking fossil fuel emissions with global warming threatens the profits of the fossil fuel industry.

According to a recent nationwide survey: **More Doctors smoke Camels than any other cigarette**

In these cases, a common tactic for industry groups and organisations is to manufacture doubt about the science through the promotion of “fake experts”. Fake experts are spokespersons who convey the impression of expertise in a given area without possessing actual relevant experience. Groups wishing to cast doubt on science often use fake experts to convince the public that the science isn’t settled.
Response to Misinformation

- "Fake experts" technique
- Misinformation

Change in Perceived Consensus (%)
**FACT**  
Between 90 and 100% of climate experts agree that we are mostly responsible for current global warming.

**MYTH**  
More than 31,000 scientists disagree with the consensus.

**FALLACY**  
The myth relies on fake experts and a magnified minority. Just about 0.1% of signees are actively publishing climate scientists while most of them work in other areas.

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Brian Angliss – Scholars & Rogues (2015)  
[http://sks.to/consensus](http://sks.to/consensus)
Massive open online course (MOOC) Denial101x

Next paced-run starts on April 17, 2018!

http://sks.to/denial101x
## Global warming is happening

<table>
<thead>
<tr>
<th>FACT</th>
<th>MYTH</th>
<th>FALLACY</th>
<th>VIDEO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our planet has continued to build up heat since 1998 - global warming is still happening.</td>
<td>&quot;Global warming stopped in 1998.&quot;</td>
<td>Cherry picking&lt;br&gt;Looking at one region or a short period ignores the full picture.</td>
<td><a href="http://sks.to/fm">UQx DENIAL101x 2.2.1.1 Heat Build...</a></td>
</tr>
<tr>
<td>Global warming is like rigging the weather dice, making it more likely to get hot days.</td>
<td>&quot;It's cold outside, so global warming must have stopped.&quot;</td>
<td>Impossible Expectations&lt;br&gt;Global warming doesn't mean no more cold weather, just fewer cold days compared to hot days.</td>
<td><a href="http://sks.to/fm">UQx DENIAL101x 2.2.2.1 Hot Recording...</a></td>
</tr>
<tr>
<td>Overall, glaciers across the globe are shrinking at an accelerating rate, threatening water supplies for millions of people.</td>
<td>&quot;Glaciers around the world are increasing, disproving global warming.&quot;</td>
<td>Cherry picking&lt;br&gt;Picking a handful of growing glaciers ignores the vast majority of glaciers that are shrinking.</td>
<td><a href="http://sks.to/fm">UQx DENIAL101x 2.3.1.1 Shrinking...</a></td>
</tr>
</tbody>
</table>
Fact - Myth - Fallacy Compilation of Slides

5 CHARACTERISTICS OF SCIENCE DENIAL

Fact: Overall, glaciers across the globe are shrinking at an accelerating rate, threatening water supplies for millions of people.

Myth: Cities around the world are becoming larger, increasing global warming.

Fallacy: Planting a handful of growing plants around the coast of glacial glaciers will reverse the shrinking.

Fact: Greenland is the world's largest island, floating on a thick sheet of ice. Myth: Greenlandese are afraid of their country and won't let it move.

Fallacy: Looking at one region or a single graph distorts the bigger picture.

Fact: The West Antarctic ice shelf is losing mass due to warm ocean bottom flow, leading to ice loss.

Myth: West Antarctic ice sheet is shrinking too slowly to matter.

Fallacy: Any number of factors can contribute to the increase in global warming, including change in the albedo.

Fallacy: We can measure temperature in ways that are unrelated, but the overall temperature is measured global warming.

Fact: We can measure temperature in ways that are unrelated, but the overall temperature is measured global warming.

Myth: The thermometer record is invalid.

Fallacy: Any number of factors can contribute to the increase in global warming, including change in the albedo, but the overall temperature is measured global warming.

Fact: Climate change and global warming have been discussed for decades.

Myth: The changes are from "global warming" to "climate change."

Fallacy: They didn’t change the name. The name changes with the temperature changes.

Fact: Human emissions are responsible for all of the increase in CO2, which is now over the past two centuries.

Myth: Volcanoes release about 30% of CO2 than humans.

Fallacy: Volcanoes do produce CO2, but over millions of years, the sources are too small to account for the observed changes in the air.
Thank you!

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Resources & References

The Debunking Handbook: http://sks.to/debunk

