Science (mis)information in today’s society

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Some background...

- What we know about what we know about science?
- How we find out about science?
- How confident are we in scientific institutions?
Basic scientific knowledge seems to be increasing...

Source: (Miller, 2010)
U.S. 2015 PISA Results in an International Context

Science
No change in average score from 2012
U.S. Ranking*
21 2012
18 2015
5 that were now
3 that were now

Reading
No change in average score from 2012
U.S. Ranking*
18 2012
15 2015
6 that were now
5 that were now

Math
Average score lower than in 2012
U.S. Ranking*
28 2012
35 2015
7 that were now
3 that were now

*Rankings are based on the 60 education systems that participated in both PISA 2012 and PISA 2015 and are determined by calculating the highest possible rank (number of education systems performing higher plus one).
Where do we get scientific knowledge?
Most Americans get science news from general sources, but fewer see them as accurate

<table>
<thead>
<tr>
<th>General News Sources</th>
<th>They regularly get their science news from each source type</th>
<th>Each source type gets science facts right most of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>News outlets that cover a range of topics</td>
<td>54%</td>
<td>28%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specialty Sources</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Documentaries or other science video programs</td>
<td>45</td>
<td>52</td>
</tr>
<tr>
<td>Science magazines in print or online</td>
<td>25</td>
<td>47</td>
</tr>
<tr>
<td>Science and technology centers or museums</td>
<td>1.2</td>
<td>54</td>
</tr>
</tbody>
</table>

Note: “Most of the time” combines those who said “almost all” or “more than half” of the time. Respondents who gave other responses or who did not give an answer are not shown. Other source types rated are not shown.

Source: Survey conducted May 30-June 12, 2017. “Science News and Information Today”

PEW RESEARCH CENTER
How confident are we in science?

Confidence in the leaders of the scientific community has been stable since the 1970s

% of U.S. adults who say they have a great deal of confidence in the people running each of these institutions

100%

44
Scientific community

37
Medicine

Note: Respondents who gave other responses or who did not give an answer are not shown.
Source: General Social Surveys, NORC.
PEW RESEARCH CENTER
How confident are we in science?

Confidence in leaders of the military has gone up; confidence in some other institutions is declining

% of U.S. adults who say they have a great deal of confidence in the people running each of these institutions

100%
Why do we care?

Decisions of public consequence (e.g., climate change)

Decisions of private consequence (e.g., medical)
Almost **all** knowledge of shared interest is mediated

What scientific knowledge do you know from direct experience?
Mediation process for scientists...
Mediation process for citizens
That mediation process varies...

The science curriculum in K12 is much more robust than health...

But many more people see doctors regularly for advice about their health than scientists regarding scientific issues of contemporary interest.
And is consequential.

How many of you have a family member who is a doctor, and who you might call for advice?
And is consequential.

How many of you have a family member who is a doctor, and who you might call for advice?

From Chen, Persson, Polyakova (NBER, 2019) -- having a doctor in the family is causally associated with improved health behaviors and outcomes:

Eight years after the applicant’s matriculation, older relatives are 3 (5) percentage points less likely to have had a heart attack (heart failure), and 27% more likely to adhere to medication that can prevent heart attacks. Among younger relatives, access to intra-family expertise also raises preventive investments: adolescents are 20 percentage points more likely to be vaccinated against HPV by the age 25. Further, children have fewer inpatient stays, suggesting general health improvements.
The mediation process has changed
Scientific misinformation
Scientific misinformation

Definition: Information inconsistent with the scientific epistemic consensus.
Scientific misinformation

*Definition:* Information inconsistent with the scientific epistemic consensus.

Does not equal: uninformed or untrue.
Processes of misinformation
What we’ve got here is a failure to mediate...

Fake science + oblivious mediation

Incompetent mediation

Corrupted scientific mediation
Dr. Ernest Krebs was a biochemist fascinated by the lifestyle habits of the ancient Hunzas, a remote people near Northern Pakistan. They enjoyed near-perfect health and lived to incredible old age without obesity, heart disease, or cancer. Their secret was the large quantities of apricot kernels they consumed in their diet.
Apricot kernels may have some health benefits, and some people have suggested that they may help fight cancer. Scientists have proposed that a compound called amygdalin, present in apricot kernels, may be a way to eradicate tumors and prevent cancer by stopping cells from reproducing.  

Apricot seeds: Cancer treatment or health risk? - Medical News Today
https://www.medicalnewstoday.com/articles/314337.php

People also ask
Can apricot seeds cure cancer?
How many apricot seeds can kill you?
Why is the vitamin b17 illegal?
Can you die from eating apricot seeds?

Apricot Seeds and Cancer: Debunking the Myth | Dana-Farber Cancer ...

Nov 24, 2017 - Apricot Seeds and Cancer: Debunking the Myth.... Another theory holds that cancer is a result of a vitamin deficiency, and amygdalin – also known as Vitamin B17 – can restore the body to health. Yet another theory claims that in damaging cancer cells, amygdalin boosts the immune system to fight cancer.
Apricot Kernels for Cancer: The Real Story - The Truth About Cancer
https://thetruthaboutcancer.com/cancer-prevention
Jul 19, 2017 - Have you heard about apricot kernels and a compound known as amygdalin, laetrile, or Vitamin B17? Discover the history of this powerful...

Laetrile Amygdalin - Cancer Research UK
https://www.cancerresearchuk.org/about-cancer/cancer-in-general/laetrile
Oct 17, 2018 - Laetrile is promoted as an alternative cancer treatment. ... substance found in raw nuts, bitter almonds, as well as apricot and cherry seeds.

Amygdalin from Apricot Kernels Induces Apoptosis and Causes Cell ...
by M Saleem - 2018 - Cited by 2 - Related articles
Amygdalin from Apricot Kernels Induces Apoptosis and Causes Cell Cycle Arrest in Cancer Cells: An Updated Review. Saleem M(1), Asif J(2), Asif M(2), Saleem ...

Apricot Seeds Cancer at Amazon® | Amazon Official Site
https://www.amazon.com/
⭐️⭐️⭐️⭐️⭐️ Rating for amazon.com: 4.7 - Call wait time: About 1 minute
Buy Apricot Seeds Cancer at Amazon. Free Shipping on Qualified Orders. Explore Amazon Devices.
Amazon Home & Kitchen - Shop Echo & Alexa Devices - Explore Amazon Smart Home

Searches related to cancer apricot seeds
apricot seeds cancer testimonials
apricot seeds cancer success rate
how to eat apricot seeds
apricot kernels dosage
has anyone died from eating apricot seeds
apricot seeds cyanide
apricot kernels uk
apricot seeds health benefits and side effects
APRICOT KERNEL: User ratings for effectiveness, side effects, safety...
Read user ratings and reviews for APRICOT KERNEL on WebMD including side effects and...
I have just been taking Apricot Kernels for about 1 1/2 weeks now, and I am ... I am cancer free and will take apricot pits for the rest of my life.

Apricot Kernels for Cancer: The Real Story - The Truth About Cancer
https://thetruthaboutcancer.com » Cancer Prevention 
Jul 19, 2017 - Have you heard about apricot kernels and a compound known as amygdalin, laetrile, ... Discover the history of this powerful anti-cancer agent.
Natural cancer fighters

November 18, 2018

Verified Purchase

For years this has been deemed cancer fighter mostly in Mexico. I was diagnosed with stage 4 cancer and gave been fighting it for almost 2 years. It has remained dormant however I started taking this and with other items I have found at last on Amazon, on my last MRI and Dr. appointment my tumors are finally shrinking!!!!!

11 people found this helpful
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vaccine injury
vaccination
vaccination for children
vaccines for babies
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vaccines calling the shots
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vaccines penn and teller
Vaccines gave my son autism
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Vaccines Destroy Children: Is Your Child Next?
LarryCook333 • 27K views • 2 years ago
What would happen if parents *believed* that vaccination will maim or kill their child? Vaccines are destroying our children ...
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Truth! Vaccines DO Cause Autism!!
VAXXED TV • 23K views • 9 months ago
Get Peeps TV on Roku and follow Peeps TV on Periscope, Facebook and Instagram for more truth from the people.

Madison: Before & After Vaccine Induced Autism
madinmikala • 1.4M views • 10 years ago
Our Journey of Autism through our daughter's eyes! I will always welcome others whom have witnessed the same experience with ...
New York county takes 'extremely unusual' step to ban unvaccinated minors from public places amid measles outbreak

By Debra Goldschmidt, CNN

Updated 9:57 AM ET, Wed March 27, 2019
Inept mediation

“Honest” but failed effort to communicate science

Many examples in media, esp nutrition
Eating three or more eggs a week increases risk of heart disease and early death, study says

CHICAGO — It’s been debated for years: Are eggs good or bad for you? People who eat an added three or four eggs a week or 300 milligrams of dietary cholesterol per day, have a higher risk of both heart disease and early death compared with those who eat fewer eggs, new research finds.
disease epidemiology. Sixth, the study findings are observational and cannot establish causality.

Conclusions

Among US adults, higher consumption of dietary cholesterol or eggs was significantly associated with higher risk of incident CVD and all-cause mortality in a dose-response manner. These results should be considered in the development of dietary guidelines and updates.
Corrupted mediation

Purposive effort to disseminate misinformation
Corrupted mediation: Example of opioid crisis
Sackler Embraced Plan to Conceal OxyContin’s Strength From Doctors, Sealed Testimony Shows

“It would be extremely dangerous at this early stage in the life of the product,” Friedman wrote to Sackler, “to make physicians think the drug is stronger or equal to morphine....We are well aware of the view held by many physicians that oxycodone [the active ingredient in OxyContin] is weaker than morphine. I do not plan to do anything about that.”

“I agree with you,” Sackler responded. “Is there a general agreement, or are there some holdouts?”
Figure 1. National Drug Overdose Deaths
Number Among All Ages, by Gender, 1999-2017

Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018
Interventions

Good news: people can be influenced by corrections and accurate information (e.g., see work by Bode & collaborators)

Most important: improve the mediation processes within the scientific-industrial complex.*

Make people more discriminating consumers of information (?)

Improve media reporting on science*

Change emphasis of Internet platforms, to quality of information*
Example:

Use of 10,000 or so contractors, who assess *relevance* and *authoritative* of search results

*But:* what is the weight between those two criteria?

*And* can these 10,000 individuals assess how authoritative a search is?

→ perhaps have those from within scientific community assess authoritativeness?
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Improve media reporting on science* (?)

Change emphasis of Internet platforms, to quality of information* (?)

*May not be in economic interest...