

# TRANSLATING SCIENCE TO THE PUBLIC: A KEY STEP TO GAIN SOCIETAL BUY-IN FOR IMMUNIZATION

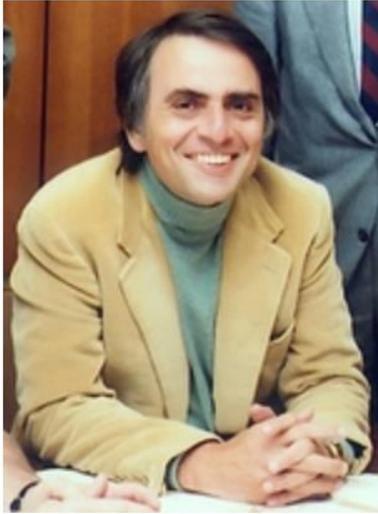
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**FIU** | **Communication**

# OVERVIEW

- Public understanding vs. Public participation in science
- Understanding the audience – they have valid knowledge too
- Issues with of translating science to the public
- How communication research can inform immunization efforts
- The communication imperative for public health: how we can do it better

# PUBLIC UNDERSTANDING OF SCIENCE



“We've arranged a global civilization in which most crucial elements profoundly depend on science and technology. We have also arranged things so that almost no one understands science and technology. This is a prescription for disaster. We might get away with it for a while, but sooner or later this combustible mixture of ignorance and power is going to blow up in our faces.”

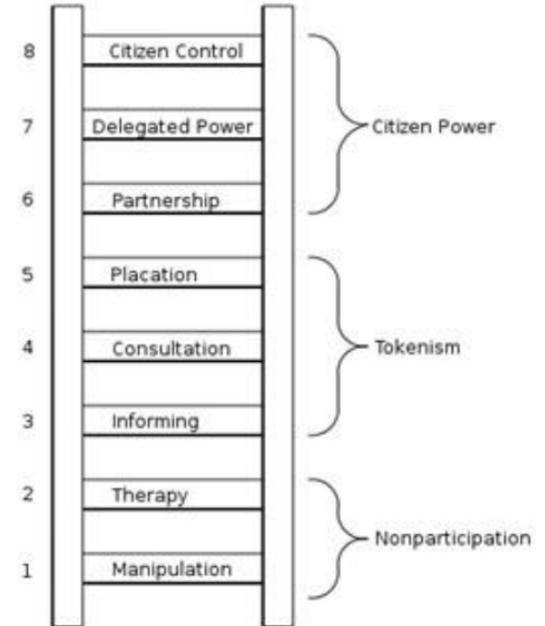
– Carl Sagan, *The Demon-Haunted World: Science as a Candle in the Dark*



# PUBLIC INVOLVEMENT IN SCIENCE

Which do we aim for?

- Public interest in science
- Public support for science
- Public understanding of science
- Public engagement with science
- Public participation in science
- Public control of science



Arnstein, 1969. Ladder of Citizen Participation

# AVOIDING A DEFICIT MODEL

- Public “understanding” of science can be seen as a deficit model
  - Blame lack of knowledge, bad journalism for public’s lack of trust in science
  - Assumes the public must not care because they don’t UNDERSTAND
  - However this is not necessarily the case. If so, we could solve problems with factsheets and documentaries.
- Science literacy DOES NOT EQUAL public support of science
- A person’s knowledge, opinions, attitudes, values and worldview will shape how they interpret scientific information (e.g. evolution)

# SOME RELEVANT COMMUNICATION CONCEPTS

**USES AND GRATIFICATIONS THEORY:** People use media to gratify different needs ranging from entertainment, escape, information, relational, confirming world view.

**EASINESS EFFECT OF SCIENCE POPULARIZATION:** People agree more with science written for lay people than with science written for experts. (credibility)

**FRAMING:** The media focuses attention on certain events, and certain characteristics of those events and makes them more salient, which places them within a field of meaning.

**COMMUNICATIVE ACTION:** People engage in cooperative action based upon mutual deliberation and argumentation. Communicative action serves to transmit cultural knowledge, renew it, and that processes creates a possibility of achieving mutual understanding.

# UNDERSTANDING THE AUDIENCE

- Lay people in the audience also have their own personal experiences and “lay” knowledge based on their personal experience, culture and conventional wisdom (Wynne 1992).
  - Science communicators must take this knowledge into account.
  - Discounting it feeds distrust
- Feeling ignored by the media the audience is using social media and other user-generated content platforms to develop their own frames and interpret scientific issues.

# WHY IS SOME SCIENCE CONTROVERSIAL

- When controversies occur, it is likely that the scientific issue has **POLITICAL, ECONOMIC, SOCIETAL** or other value-laden implications. (I would add **CULTURAL**)
- Communication about issues such as climate change, GMOs, vaccinations. etc. must take into account reader's values, ideology, knowledge, attitudes, and social context.
  - Or it will simply fail

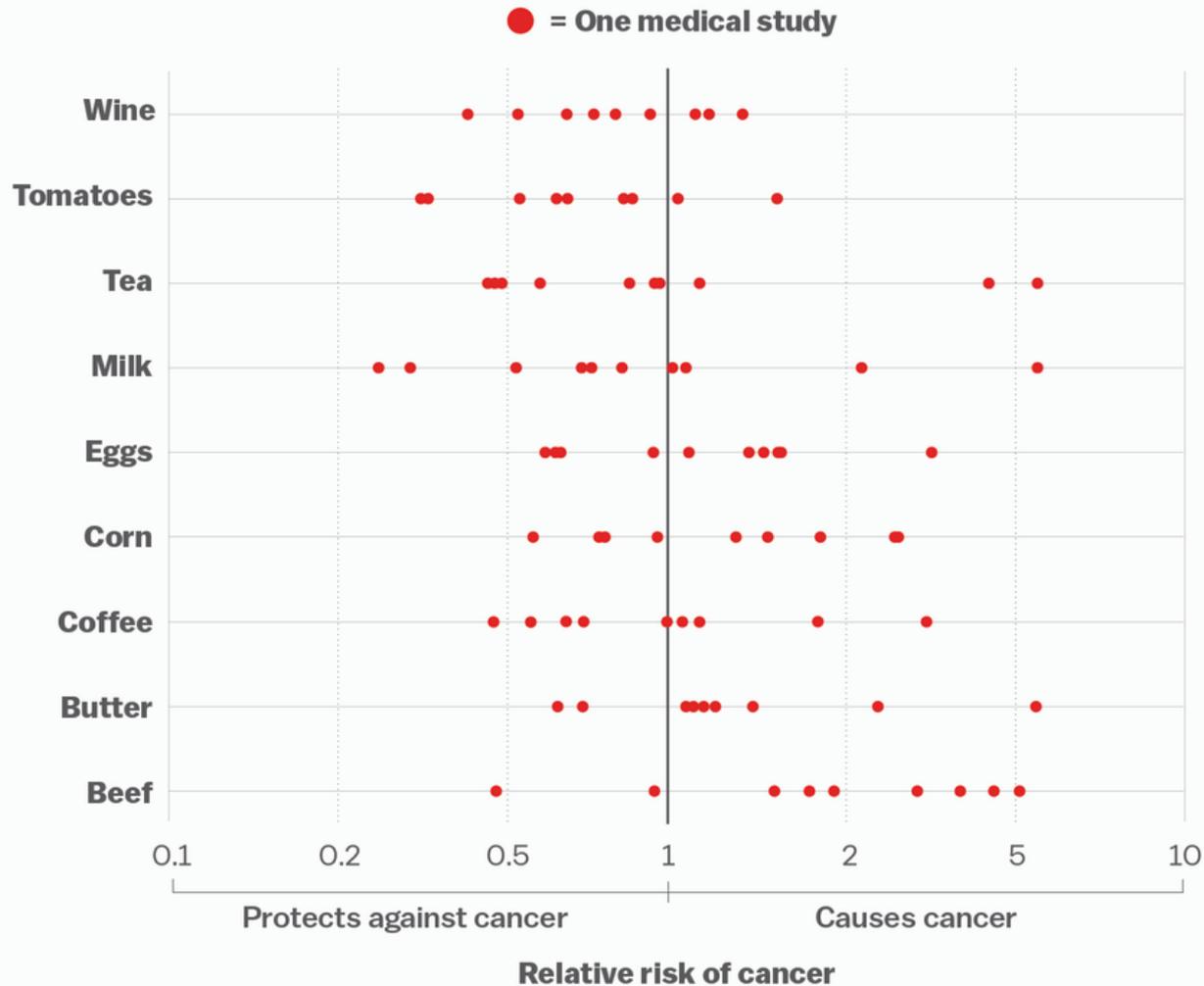


« Currently, here is what we know about GMOs...

Thus there is no *rational* reason to be frightened! »

# “SCIENCE” ALSO CAUSES UNCERTAINTY

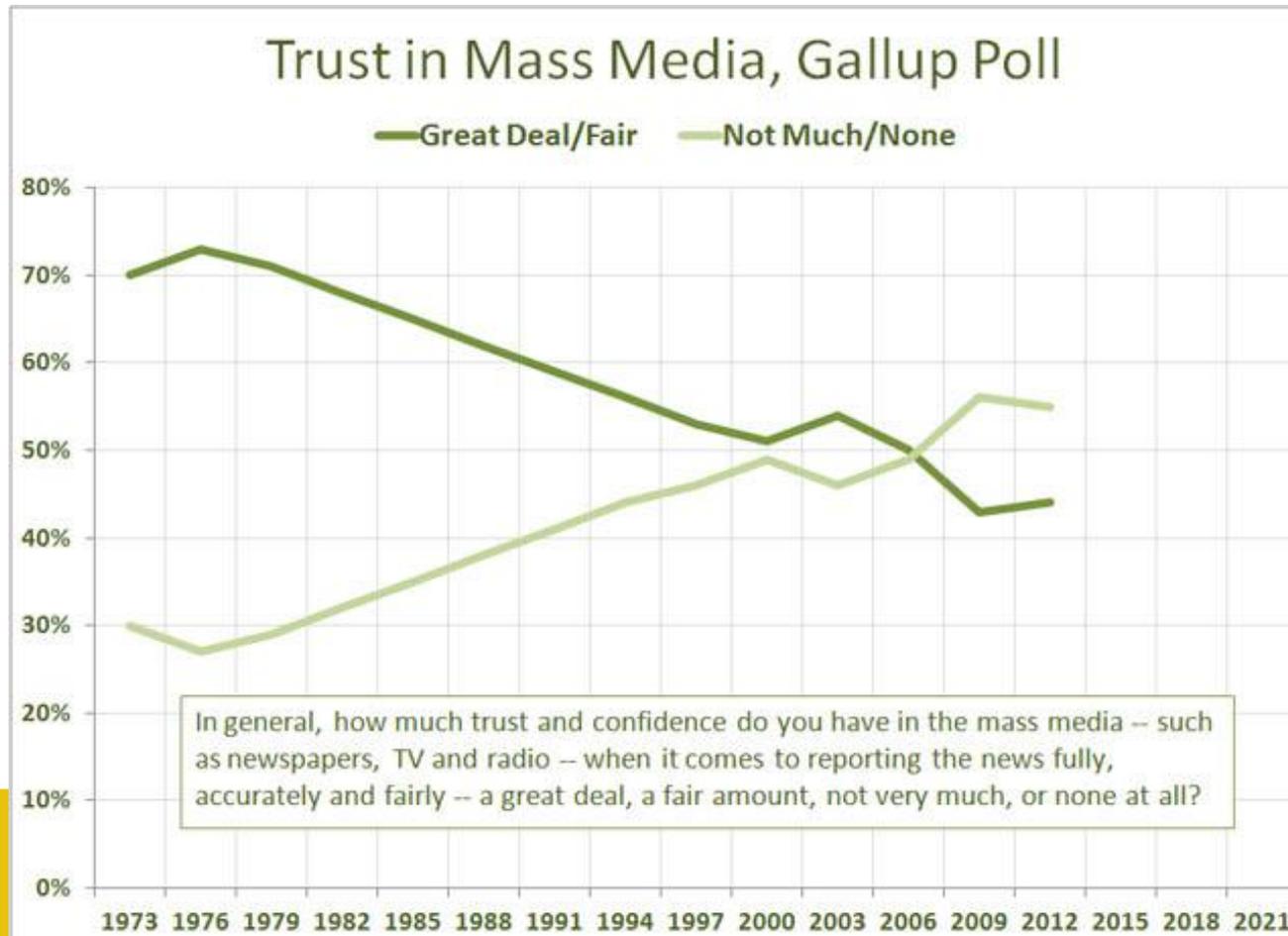
Everything we eat both causes and prevents cancer



SOURCE: Schoenfeld and Ioannidis, *American Journal of Clinical Nutrition*

# BESIDES VALUES....ANOTHER CHALLENGE

## The media, and its diminishing credibility



# WHY.....?

- “I saw it on the news” or “I read it in the newspaper” no longer guarantees that it is accurate
  - “Post truth”
  - Social media
- Scientists sent to talk to the public, are not always prepared...and it does not always go well. (CRISIS OF MEDIATORS)
  - During the heated debate that ensued about vaccination in Italy in 2016, an immunologist who had heavily and generously committed to engage in discussion through his own Facebook page eventually decided to abruptly cancel all comments by claiming, *‘Here only those who have studied can comment, not the common citizen. Science is not democratic’*.
  - <https://sagepus.blogspot.com/2017/09/science-communication-20.html>

# THE SCIENCE NEWS CYCLE

JORGE CHAM © 2009

Start Here



YOUR GRANDMA

**Your Research**  
 Conclusion: A is correlated with B ( $\rho=0.56$ ), given C, assuming D and under E conditions.



...is translated by...

**UNIVERSITY PR OFFICE**  
 (YES, YOU HAVE ONE)  
 FOR IMMEDIATE RELEASE:  
 SCIENTISTS FIND POTENTIAL LINK BETWEEN A AND B (UNDER CERTAIN CONDITIONS).



...which is then picked up by...

**NEWS WIRE ORGANIZATIONS**  
 A CAUSES B, SAY SCIENTISTS.



...who are read by ...

THE INTERNETS

Scientists out to kill us again.  
 POSTED BY RANDOM DUDE  
 Comments (377)  
 OMG! i kneew itt!  
 WTH???????



...then noticed by...

We saw it on a Blog!  
**A causes B all the time**  
 What will this mean for Obama?  
 BREAKING NEWS BREAKING NEWS BREA

**CNC Cable NEWS**



...and caught on ...

**4 LOCAL EYEWITLESS NEWS**

WHAT YOU DON'T KNOW ABOUT "A"... CAN KILL YOU! MORE AT 11...



...eventually making it to...



-The quality of public communication of science is highly dependent on the quality of research produced and published in specialized contexts.

-With 24 hour news cycle, "science" is pushed out to the public without proper filtering for quality.

# THE INFAMOUS CASE OF VACCINE RISK MISINFORMATION

In 1998 the Lancet published a now discredited study suggesting a link between the MMR vaccine and autism (and also an inflammatory bowel syndrome).

This was a case series report with 12 children, who had had MMR vaccine and also had autism.

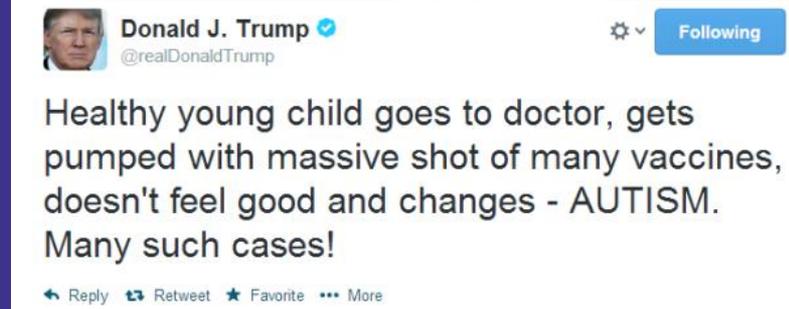
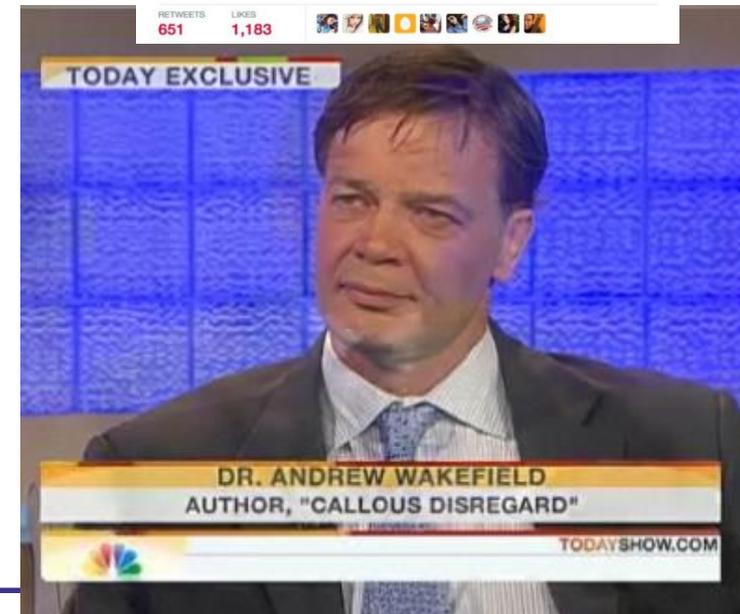
This study has since been retracted, but the damage it did to universal immunization efforts is devastating.

Why such an effect?



# SOME REASONS WHY

- Social panic about increasing rates of autism
- Journalists that did not communicate the nuances of the methodology
- Interest in anomalies – what is newsworthy
- And have I mentioned... social media?



# THEN THE MEDIA FRAMED THE BLAME FOR THE MISGUIDED SCARE

## Health Communication

Publication details, including instructions for authors and subscription information:  
<http://www.tandfonline.com/loi/hhth20>

### The Blame Frame: Media Attribution of Culpability About the MMR-Autism Vaccination Scare

Avery Holton <sup>a</sup>, Brooke Weberling <sup>b</sup>, Christopher E. Clarke <sup>c</sup> & Michael J. Smith <sup>d</sup>

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<sup>b</sup> School of Journalism and Mass Communication, University of South Carolina

<sup>c</sup> Department of Communication, Cornell University

<sup>d</sup> School of Medicine, University of Louisville

Available online: 11 Jan 2012

<i>Attribution</i>	<i>Frequency</i>	<i>Cumulative Percent</i>
Andrew Wakefield	108 (39.7%)	39.7
Science/medical Society	76 (27.9%)	67.6
Other actor	43 (15.8%)	83.4
<i>The Lancet</i>	29 (10.7%)	94.1
The media	7 (2.6%)	96.7
Other	5 (1.8%)	98.5
Other journal	3 (1.1%)	99.6
	1 (0.4%)	100.0

*Note.*  $n = 272$ . Nine articles had no dominant attribution. Frequency presented numerically with percentage in parentheses.

TABLE 1 Dominant Attribution of Blame for the MMR-Vaccination Scare

# VACCINE HESITANCY

## (NOT THE SAME AS ANTI-VAXXERS)

- Refers to delay in acceptance or refusal of vaccination despite availability of vaccination services.
- Is complex and context specific, varying across time, place and vaccines.
- Is influenced by factors such as complacency, convenience and confidence.
- Factors influencing hesitancy fall under three categories:
  - contextual,
  - individual and group,
  - vaccine/vaccination-specific influences.

The SAGE Working Group on Vaccine Hesitancy

# WHICH BRINGS US TO .... RISK COMMUNICATION

- The way in which individuals assess risk has a potentially huge impact at a societal level.
  - e.g. micro decisions about cyber-crime, national health costs
- Everyone assess risk on a daily basis (crossing the road, eating bacon, second glass of wine, going on a date)
- We often feel more fear things with low probability (terrorism), than high probability (HIV, heart disease).
  - Sunstein (2006) uses the term “misfearing”
  - Kasperson et al (1988): risk amplification
  - WHY? Media, framing, prevention funding.

We need more understanding of the way in which individuals assess risk, to enable them to make decisions in their own best interest, or at least “value-congruent”. i.e. The risk fit their value structure.

# RISK COMMUNICATION IN THE CONTEXT OF UNCERTAINTY (OR...“WE DON’T KNOW WHAT CAUSES AUTISM”)

Uncertainty is part and parcel of scientific information in various disciplines (e.g., medical, management and social and environmental sciences)

- But we are not good at communicating uncertainty. It requires communicating probabilities, i.e. statistics.

In a study of perceived severity based on media coverage, there was no relationship between salience of the severity as covered in the media and public risk perceptions (Rim, Ha, & Kioussis, 2014).

*“Humans are very bad at understanding probability. My hope would be, if we understood probability perfectly, then we would be less open to manipulation: people trying to sell things, scare others, or even falsely reassure someone. But it may not change behavior. All the studies show that, even with good risk communication, people carry on doing what they did before.”*

– David Spiegelhalter. Winton professor for the public understanding of risk at the University of Cambridge since 2007.

# RESEARCH ON COMMUNICATION AND VACCINATION SAFETY CONCERNS

533

Views

2

CrossRef citations

9

Altmetric

Articles

# Silent Majority: Childhood Vaccinations Antecedents to Communicative Action

Brooke Weberling McKeever , Robert McKeever, Avery E. Holton & Jo-Yun Li

Pages 476-498 | Accepted author version posted online: 06 Feb 2016, Published online: 19 Apr 2016

 Download citation

 <https://doi.org/10.1080/15205436.2016.1148172>



- Study examines how and why individuals may involve themselves in communication about vaccinations, particularly on social media or in other online environments.
- Mothers who those do not support childhood vaccinations are more likely to engage in communication about the issue, including information seeking, attending, forefending, permitting, forwarding, and sharing.
- Issue importance and affective/cognitive involvement help drive communicative action regarding childhood vaccinations



## REVIEW

## Listen to the public and fulfil their information interests – Translating vaccine communication research findings into guidance for regulators

Priya Bahri ✉, Mireia Castellon Melero, European Medicines Agency

First published: 24 March 2018 | <https://doi.org/10.1111/bcp.13587>

- When regulatory authorities communicate about vaccines to the public is usually driven by data on quality, safety and efficacy.
- Concerns over safety and vaccine hesitancy create need for a new approach to communication, starting with [listening to the public debate](#).
- It is critical that regulators integrate the communication process with [product risk assessment](#) in the framework of pharmacovigilance, to ensure [that public concerns are addressed](#) and that [information about evidence and uncertainty relating to safety is provided to the public](#) in specific, clear and accurate manner.
- Meeting the [information interests](#) of the public is the principal prerequisite for [informed decisions](#) as well as safe and effective use of vaccines and medicines overall. This is also [fundamental for trust](#) in the authorities' commitment to patient and population health.

<https://bpspubs.onlinelibrary.wiley.com/doi/abs/10.1111/bcp.13587>



## Health communication and vaccine hesitancy

Susan Goldstein <sup>a, 1</sup> ✉, Noni E. MacDonald <sup>b, 1</sup>, Sherine Guirguis <sup>c</sup>, the SAGE Working Group on Vaccine

Key points to take into account in devising and implementing a communication plan include:

- (i) it is necessary to be **proactive**;
- (ii) communication is a **two-way** process;
- (iii) knowledge is important but not enough to change behavior; and
- (iv) communication tools are available and can be selected** and used creatively to promote vaccine uptake.

**SO WHAT CAN WE DO....?**

# EFFECTIVE SCIENCE COMMUNICATION SHOULD PROMOTE....

- Dialogue
- Trust
- Relationships
- Public participation (in different social settings)

What about “public dialogue” as a media frame?

# SCIENCE COMMUNICATORS: WE MUST KNOW OUR AUDIENCE

Research and practice in science communication needs to (continue to) focus on:

- What different groups **want to know** about certain topics/issues (e.g. climate change, immunization risks)
- Communicating the implications of science issues on people's **daily lives**
- Understanding **people's concerns** about science related issues
- **Who people want to hear from** (and who they believe) about science issues
- Communicating **personal relevance**: how scientific issues are related to things that people already care about
  - This sounds easy when talking about childhood immunizations, but there is more work to do

# FOR IMMUNIZATION COMMUNICAITON: MUST UNDERSTAND OUR AUDIENCE AND SPEAK TO THEM

- The extreme anti-vaccine movement is part of an entrenched alternative medicine worldview. They may not be persuadable.
- However, medical choice and safety, are valid concerns. When doctors respond to “medical choice” activists by emphasizing the need for herd immunity, they miss the political point. It is tone-deaf.
- We can’t win this argument simply with facts, or attacking faulty arguments.
- We must understand what the barriers are. Perception of risk. Driving fears. What values are threatened?

# FROM THIS....



TO THIS....





## Health communication and vaccine hesitancy

Susan Goldstein <sup>a, 1</sup> ✉, Noni E. MacDonald <sup>b, 1</sup>, Sherine Guirguis <sup>c</sup>, the SAGE Working Group on Vaccine

Key points to take into account in devising and implementing a communication plan include:

- (i) proactive;
- (ii) two-way process;
- (iii) Address values (knowledge is not enough to change behavior)
- (iv) Use communication tools.

A communication strategy, using the right mix of the available communication tools, should be an integral part of every immunization program, addressing the specific factors that influence hesitancy in the target populations.

**GRACIAS**  
**THANK YOU**