

What drives the biasing influence of narrative information on risk perceptions?

Cornelia Betsch

& Members of the Psychology & Infectious Diseases Lab, Erfurt





Donald J. Trump ✓

@realDonaldTrump

 Follow

Healthy young child goes to doctor, gets pumped with massive shot of many vaccines, doesn't feel good and changes - AUTISM. Many such cases!

RETWEETS

8,073

LIKES

5,775



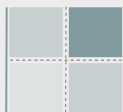
5:35 AM - 28 Mar 2014



8.1K



5.8K



Morning Mix

Mark Zuckerberg gets his baby vaccinated. Anti-vaxxers go nuts.

By Yanan Wang January 11



In this undated photo provided by Mark Zuckerberg, Max Chan Zuckerberg is held by her parents, Mark Zuckerberg and Priscilla Chan Zuckerberg. (Mark Zuckerberg via AP)

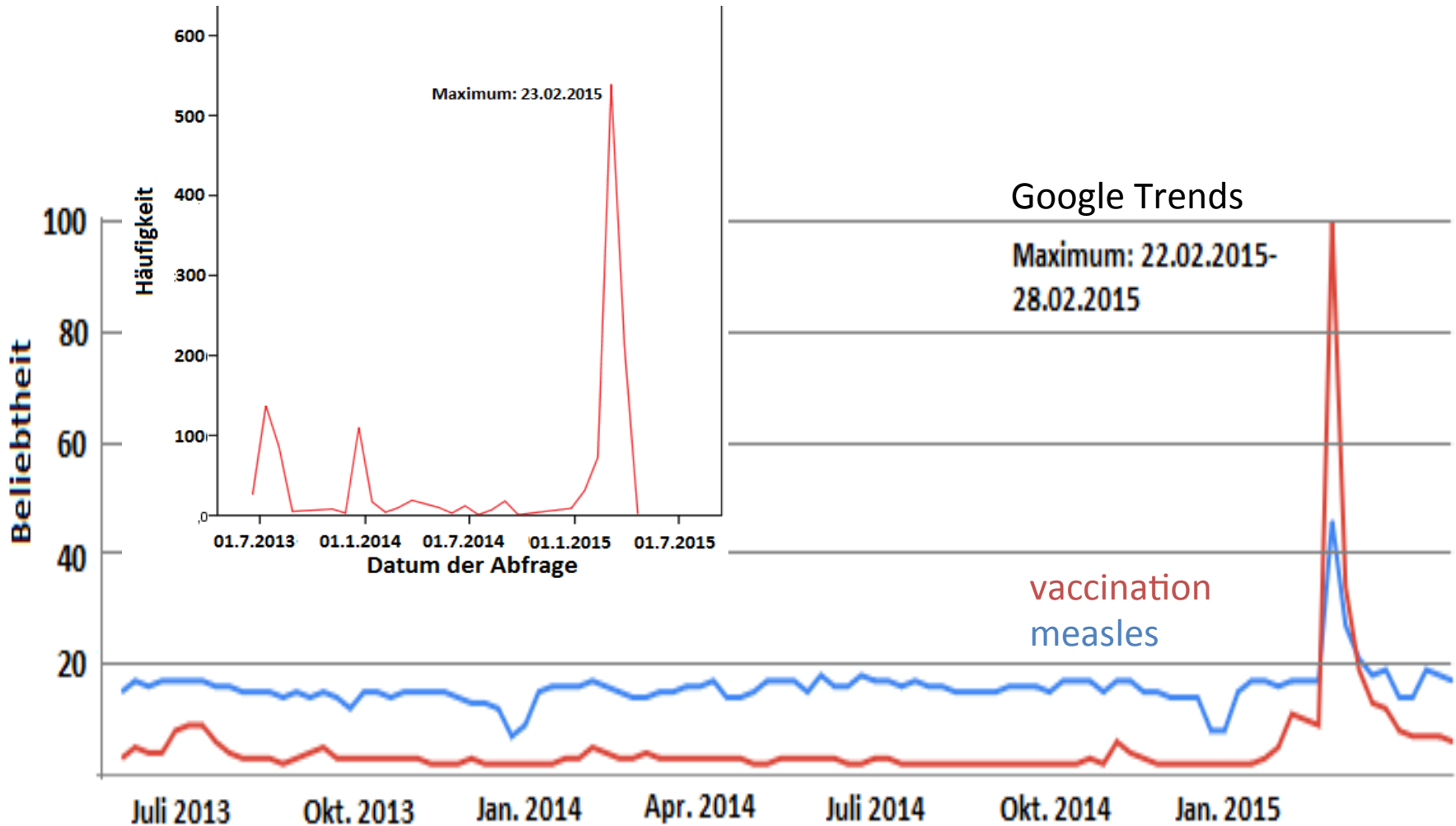
Mark Zuckerberg about 5 months ago

Doctor's visit -- time for vaccines!

3.4M 84K 36K

2015: Measles in Germany

Adverse-events data base
(Paul Ehrlich Institute)



Active ingredient of anti-vaccination websites

HOME SITE MAP LINKS/VIDEOS BOOKSTORE ABOUT JOIN CONTACT REPORT A REACTION MEMBER'S AREA LOG IN

[Free News Bulletin](#) **SEARCH**  

VRAN
VACCINATION RISK AWARENESS NETWORK

Your Child. Your Future. Your Choice.

ABOUT VACCINES HEALTH RISKS SCIENCE EXEMPTIONS PERSONAL STORIES ALTERNATIVES

PERSONAL STORIES » Personal Stories

- » [Adverse reaction to the Tdap vaccine](#)
- » [Amanda's Story - Seizures and DPT](#)
- » [Clayton's Story - Vaccine Reaction](#)
- » [Katie's Story - Medical Denial](#)
- » [Kirk's Story - Collateral Damage](#)
- » [MMR Vaccine and Autism - A Mother's Journey to Heal Her Child](#)
- » [Sara's Story - Pervasive Development Disorder and Vaccines](#)
- » [Stacy's Story - Vaccine Reaction](#)
- » [Vaccine Brain Damage](#)
- » [Vaccine Reaction Denial](#)

JOIN VRAN TODAY 

Personal Stories

For decades, vaccine risk awareness groups like VRAN have borne witness to the grief of families devastated by their child's catastrophic vaccine injuries while the mantra "the vaccines didn't do it" drones on and on.

Many of these children develop seizures and other health problems soon after vaccination. Parents are told that the seizures are not related to the vaccines, and are not a valid reason to delay the next round of shots. Held over their heads is the bogey man poised to attack the child with this or that disease if one deviates from the prescribed vaccine agenda. Shutting down their own reasoning and intuitive intelligence, parents are frightened into compliance and proceed on the disastrous course of more vaccines.

This mother's letter recounts what happened to her child. Her experience is representative of the countless families whose children's lives have been devastated by vaccine injuries.

"I believe 100% that my daughter was damaged from the vaccines. In Dec 2007 my 5 month old daughter was given the following shots, diphtheria, tetanus, pertussis, polio, Hib, hepatitis B, Meningococcal C and Prevnar (8 vaccines given at the same time). Two days later she had a grand mal seizure. By the time we got to the hospital it was over. I told the doctor and nurses that she just had her shots two days ago and they said well maybe she had a fever from the shot and that caused her seizure. She had no fever before or after the event; my concerns were ignored and brushed off. We were assured that everything was fine and it shouldn't happen



VACCINATION RISK AWARENESS NETWORK

Your Child. Your Future. Your Choice.

PERSONAL STORIES

» Personal Stories » Stacy's Story - Vaccine Reaction

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Stacy's Story – Vaccine Reaction

“Everyone is having it. It will protect you for the rest of your life.” That’s the message 17-year-old Stacy Moon got about the hepatitis B vaccine when a public health nurse wanted her to have it. It sounded good, so Stacy agreed to have the recommended 3 doses. Six hours after receiving her 3rd dose at Penticton Health Unit, the teenager began to feel tingling in the fingertips of her right hand. Within a few days, numbness had spread up her arm; she couldn’t hold a pen or glass or even open a door. By the 3rd week following the shot, Stacy was numb from her toes to her ribs, couldn’t hold her balance and found it difficult to walk. In the following few months visits to her doctor, neurologists and Vancouver for an MRI scan resulted in the diagnosis...multiple sclerosis, MS!

Right from the start, Stacy and her mother thought the Hep B shot was to blame. The pair spent countless hours doing research to verify the possibility of a connection. Stacy obtained the vaccine package insert which she should have been shown before receiving her first shot, and was shocked to find MS listed, along with lupus, Parkinson’s Disease, rheumatoid arthritis, Guillain-Barre Syndrome, SIDS and autism as rare but possible adverse reactions. A UBC MS specialist agreed with their conclusion that the vaccine brought on the MS and was to be the pivotal witness in a lawsuit they filed against the Medical Services Commission, the Okanagan Similkameen Health Region and SmithKlineBeecham Inc, the vaccine maker. The writ of summons alleged that these defendants knew or ought to have known of the risk of developing

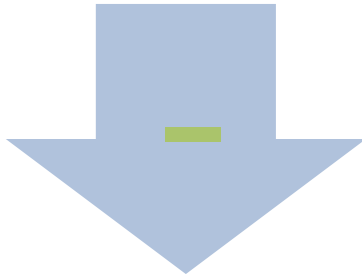
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Threat of vaccine-critical websites

- Accessing vaccine-critical websites for **5-10 minutes**

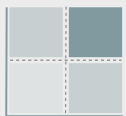


increases perception of **risk** of vaccinating.



decreases perception of risk of omitting vaccinations.

decreases the **intentions** to vaccinate.

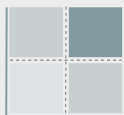


Why listen to others?

- Costly information hypothesis (Webster & Laland, 2008, Proceedings of the Royal Society Series B)

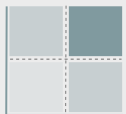
“Individuals (...) rely on social learning when the costs of acquiring or implementing personal knowledge are high, they are uncertain of the optimal behavior, their personal information is unreliable, or it has become outdated” (Kendal et al., 2005, Advances in the Study of Behavior)

Searching for information about HOW an outcome will rather than HOW LIKELY (Huber et al., 2001)



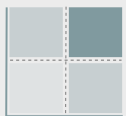
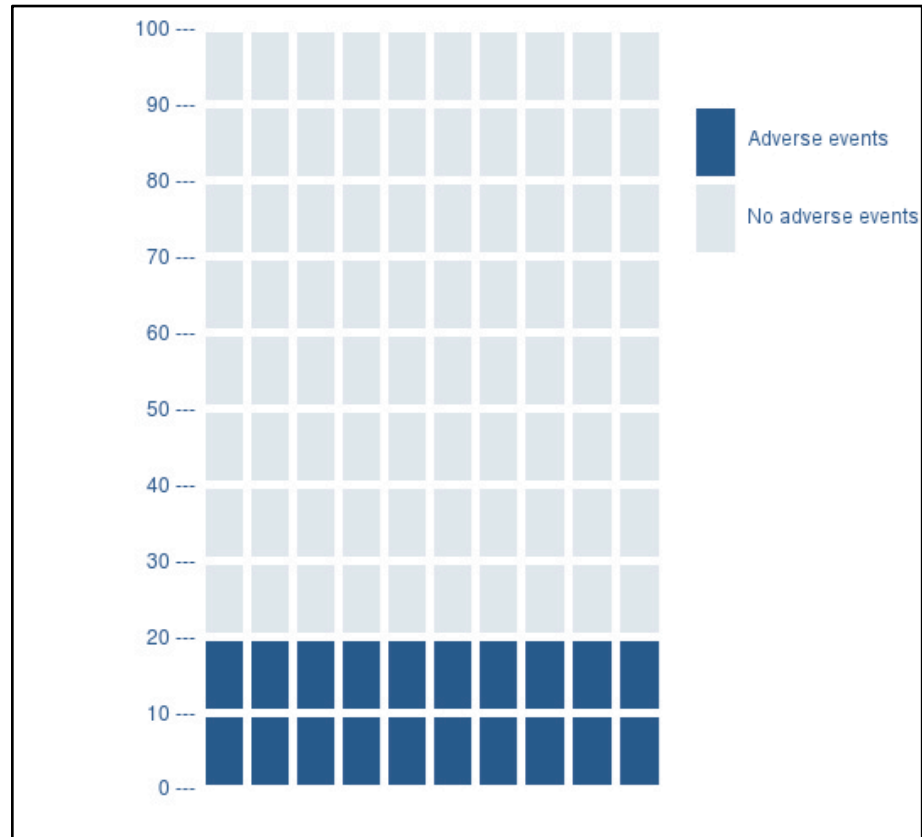
Narratives – what others say

- What drives this influenza?
- Can we do anything to prevent it?



Research Paradigm

- **Fictional disease**
- **Statistical base rate**
- **Narratives**
- **Measures:**
 - Risk perception
 - Intention to vaccinate



Internet bulletin board / forum

Patientenportal.com **Anmelden!** (kostenlos)

Patienten | Behandlung | Symptome | Forschung Suche FAQ

Filter : **Patienten**

Dysomerie-Impfstoff Bericht

Kategorie *Impfstoff*

Individuelle Patientenberichte

Was ist der Dysomerie-Impfstoff?

Aktive Immunisierung gegen die Dysomerie-Erkrankung. Der Impfstoff löst die körpereigenen Schutzfunktionen gegen den Erreger aus und verhindert somit eine Erkrankung des geimpften Individuums.



Leon

Grund der Einnahme: Unterstützung des Immunsystems

Datum	Dosierung	Nebenwirkungen
08.04.2011	einmalig	■ ■ ■ Mittel

Nach der Impfung lag ich erst mal ein paar Tage mit Fieber im Bett.



Sabine

Grund der Einnahme: Unterstützung des Immunsystems

Datum	Dosierung	Nebenwirkungen
07.04.2011	einmalig	■ Keine

Schön, dass man hier so gut Informationen teilen kann. Bin neulich erst gegen Dysomerie geimpft, überhaupt keine Probleme.



Paul

Grund der Einnahme: Dysomerie Immunisierung

Datum	Dosierung	Nebenwirkungen
05.04.2011	einmalig	■ ■ ■ Mittel

Ich habe von der Impfung einen ziemlich unangenehmen Ausschlag bekommen. Der juckt total



Jens

Grund der Einnahme: Dysomerie Immunisierung

Datum	Dosierung	Nebenwirkungen
02.04.2011	einmalig	■ Keine

Habe die Dysomerieimpfung einfach beim Hausarzt machen lassen. Hatte überhaupt keine Net

Side Effects

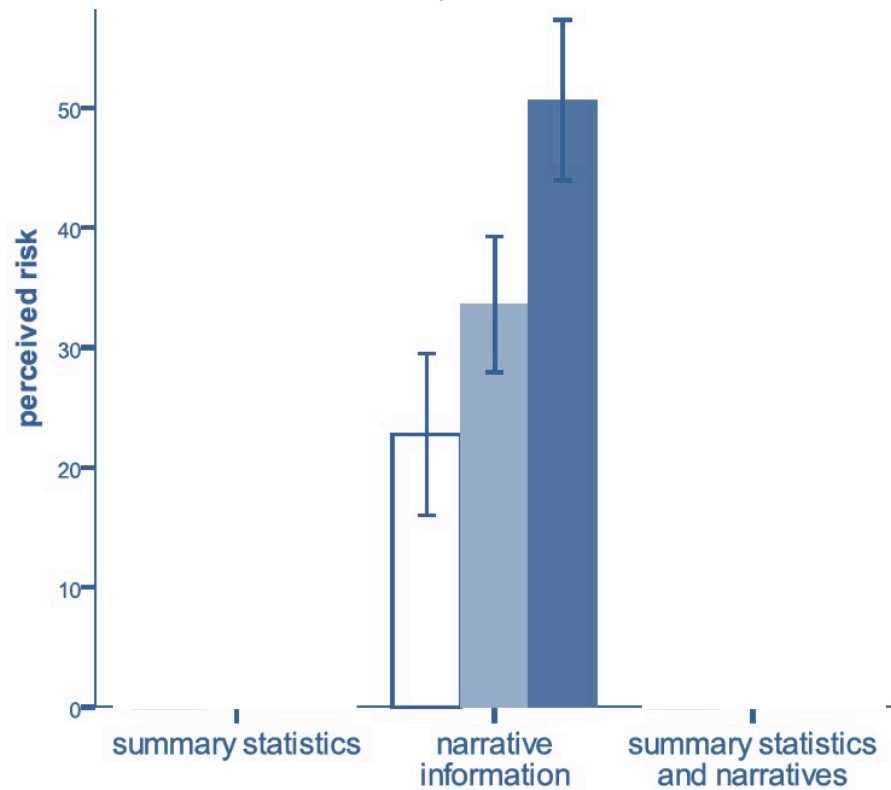
Side Effects in general

Severe	0	■
Moderate	7	■
Mild	0	■
None	13	■

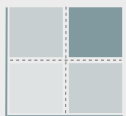


Results: narratives have strongest effect on risk perception

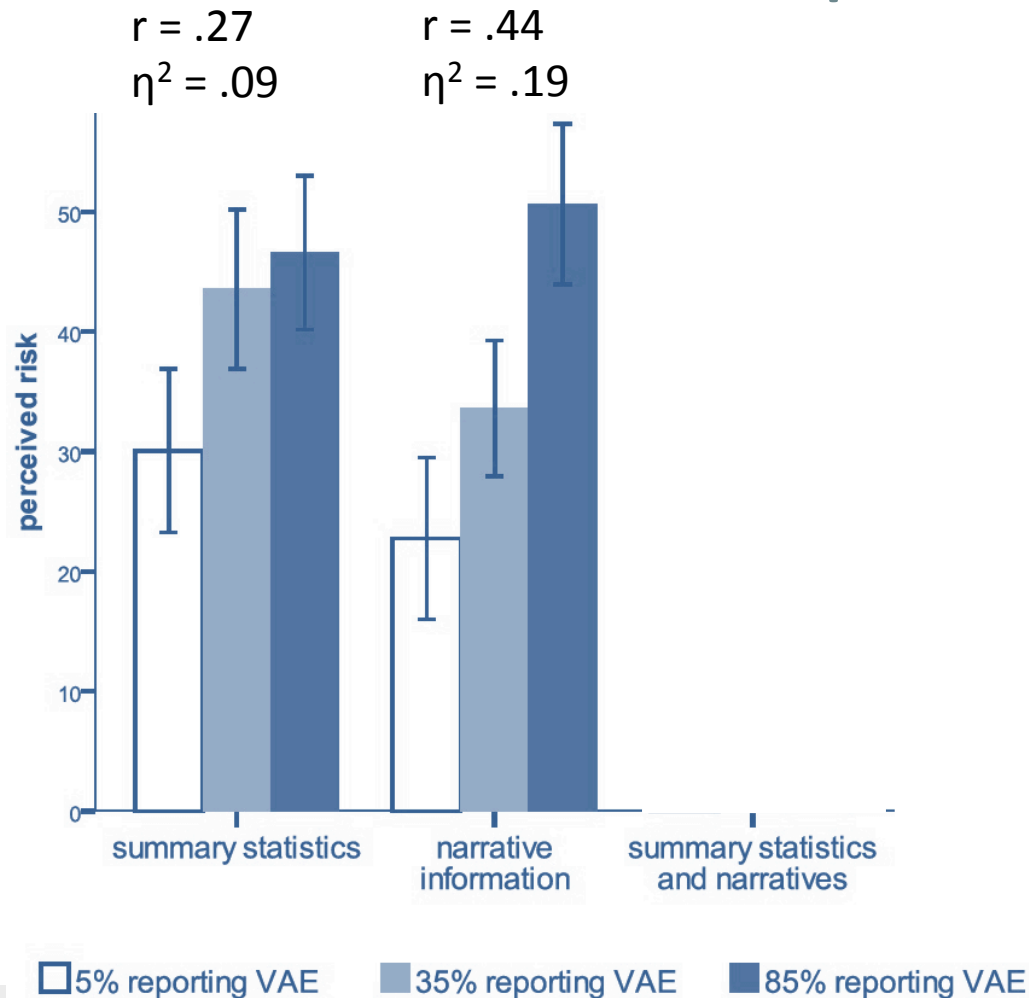
$r = .44$
 $\eta^2 = .19$



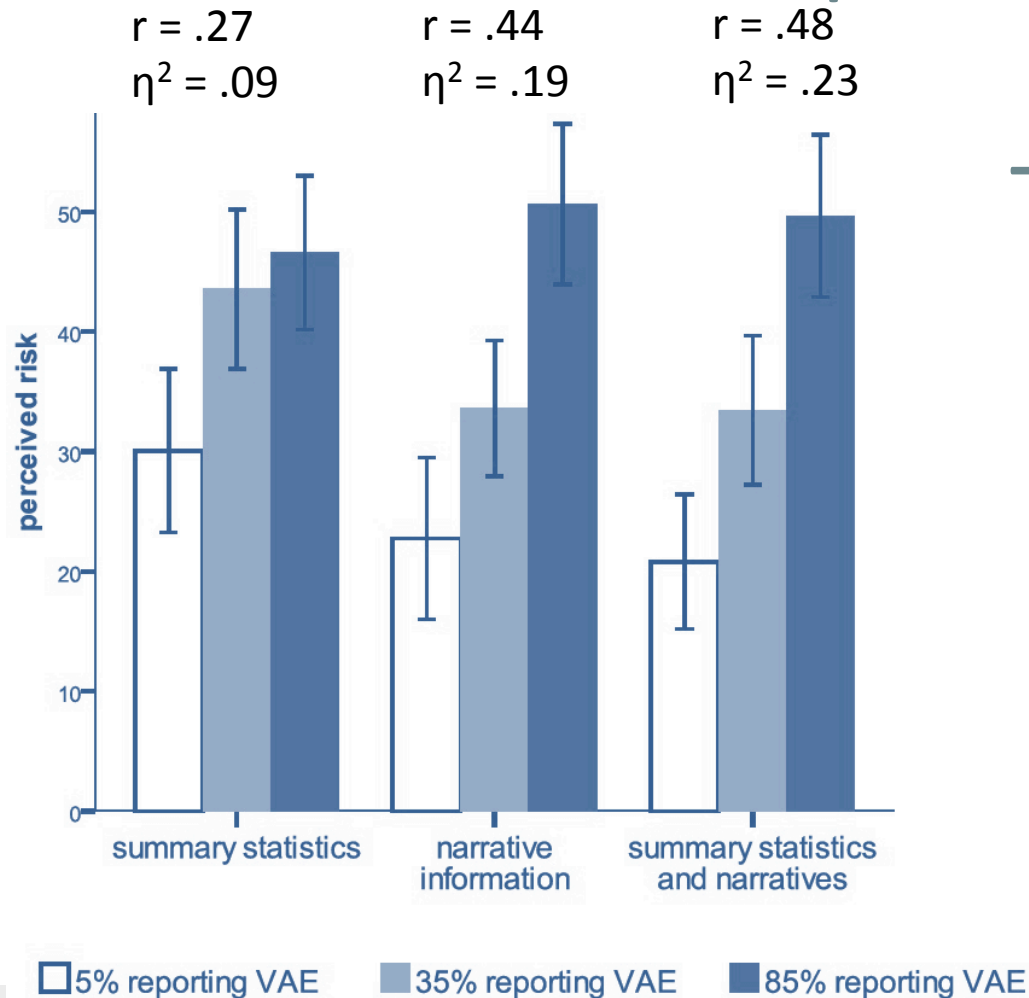
□ 5% reporting VAE ■ 35% reporting VAE ■ 85% reporting VAE



Results: narratives have strongest effect on risk perception



Results: narratives have strongest effect on risk perception

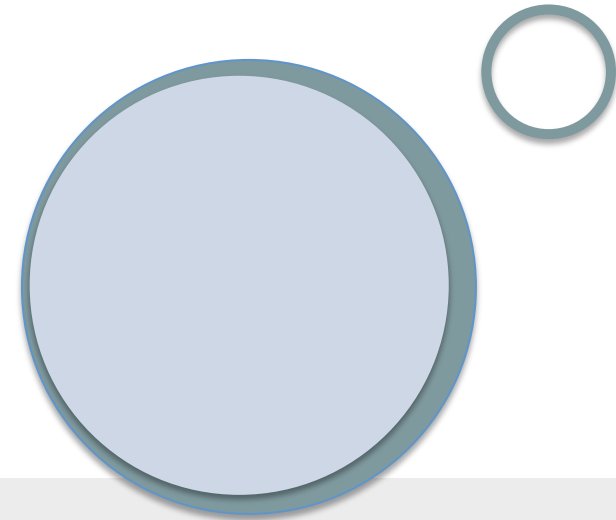


The more the higher their influence



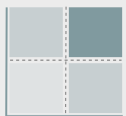
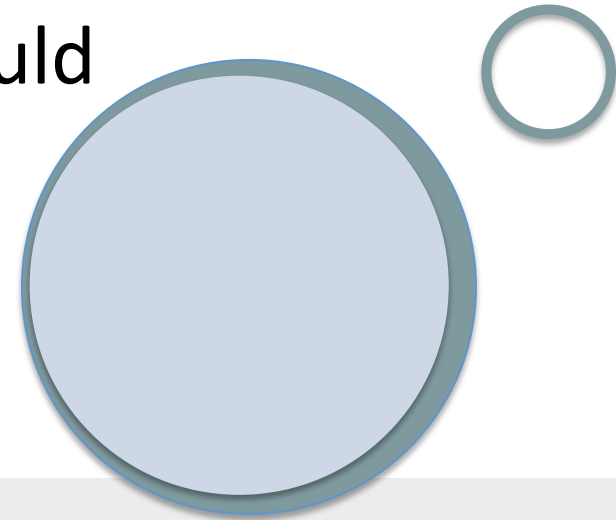
Emotionality?!! ☹️

- Emotional
 - Affect influences risk judgments
- Emotional narratives increase risk perceptions in general – **and not contingent on how many were encoded**
- Not a matter of how rich the stories are (short stories do the same job)

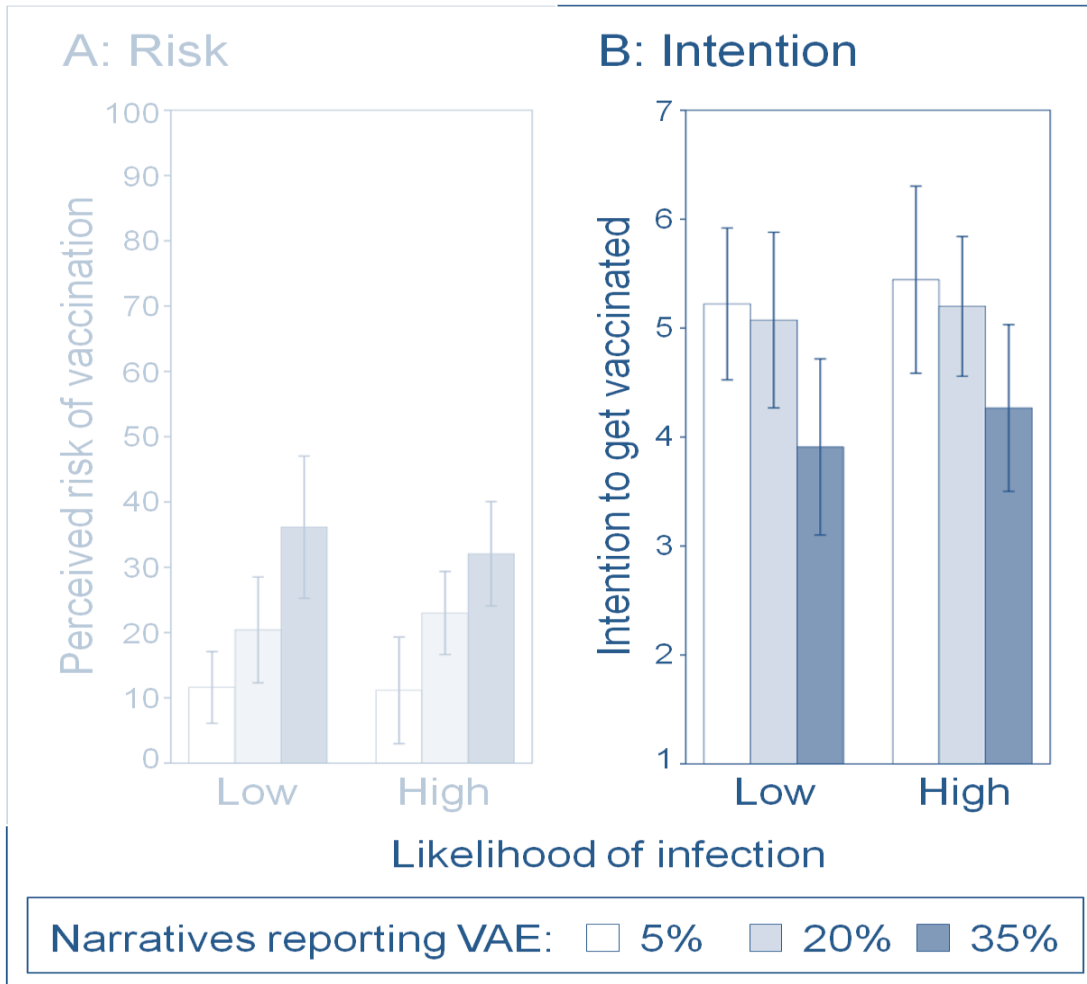


Even facing high disease risks ...

- High disease risk
 - Severity of the disease
 - Probability of contracting the disease
- high motivation to protect against the disease
- Even a „more risky“ vaccine should be acceptable in a cost-benefit analysis
- But ...

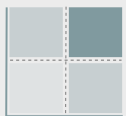
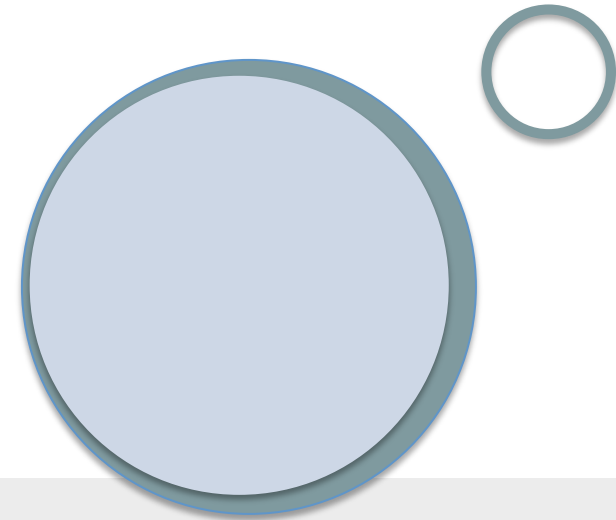


Risk of infection low vs. high



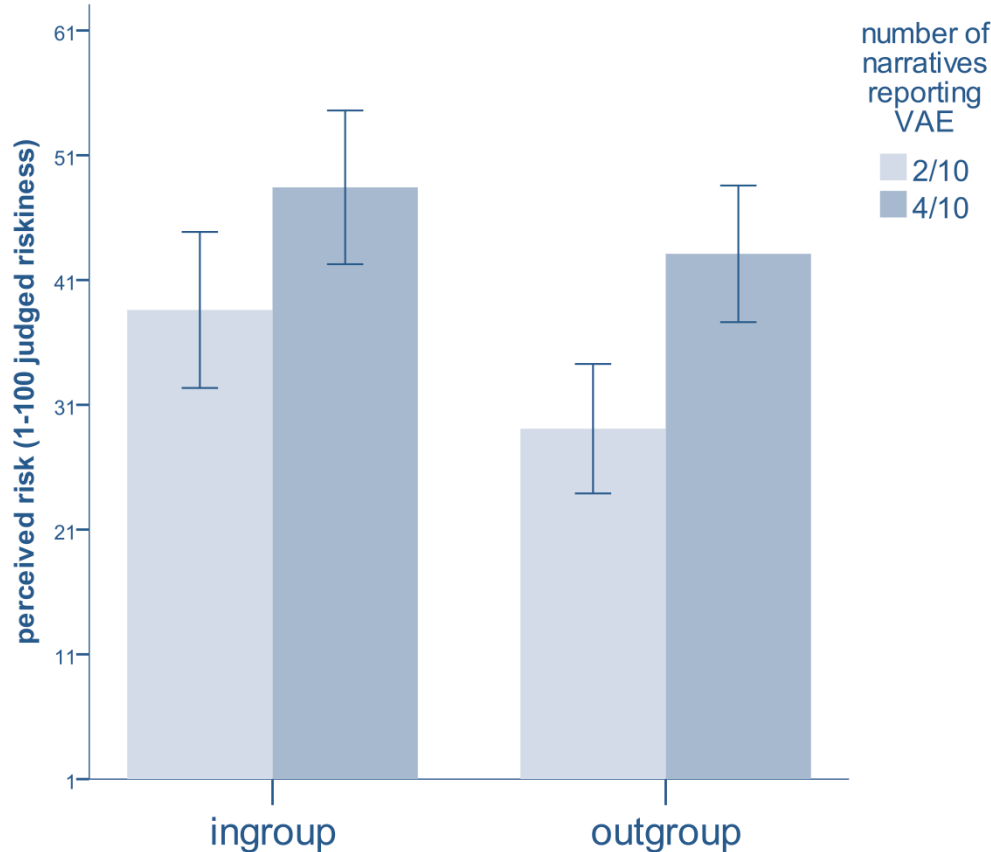
Anti vaccination activists? I don't care!

- Credibility of statistical information
 - scientific methods and data analysis used in the study to be either poor (discounting) or exemplary (augmenting)
- Credibility of narrative information
 - Health-net.de
 - vaccination-harms.de
 - Higher risk perceptions when narratives were from neutral websites
 - BUT: Narrative bias occurs even though anti-vax agenda is evident



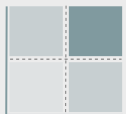
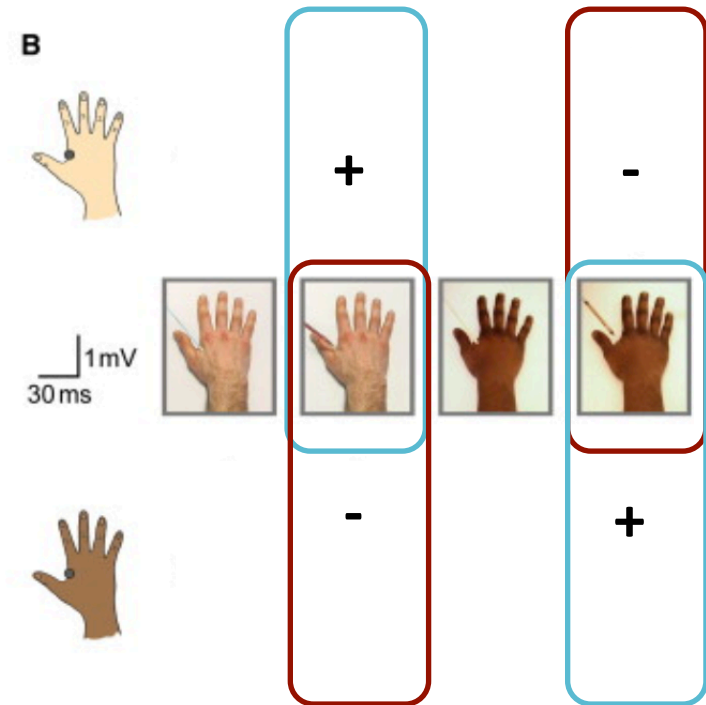
She's just like me!

- Belonging to the same social group as the harmed persons increases risk perceptions

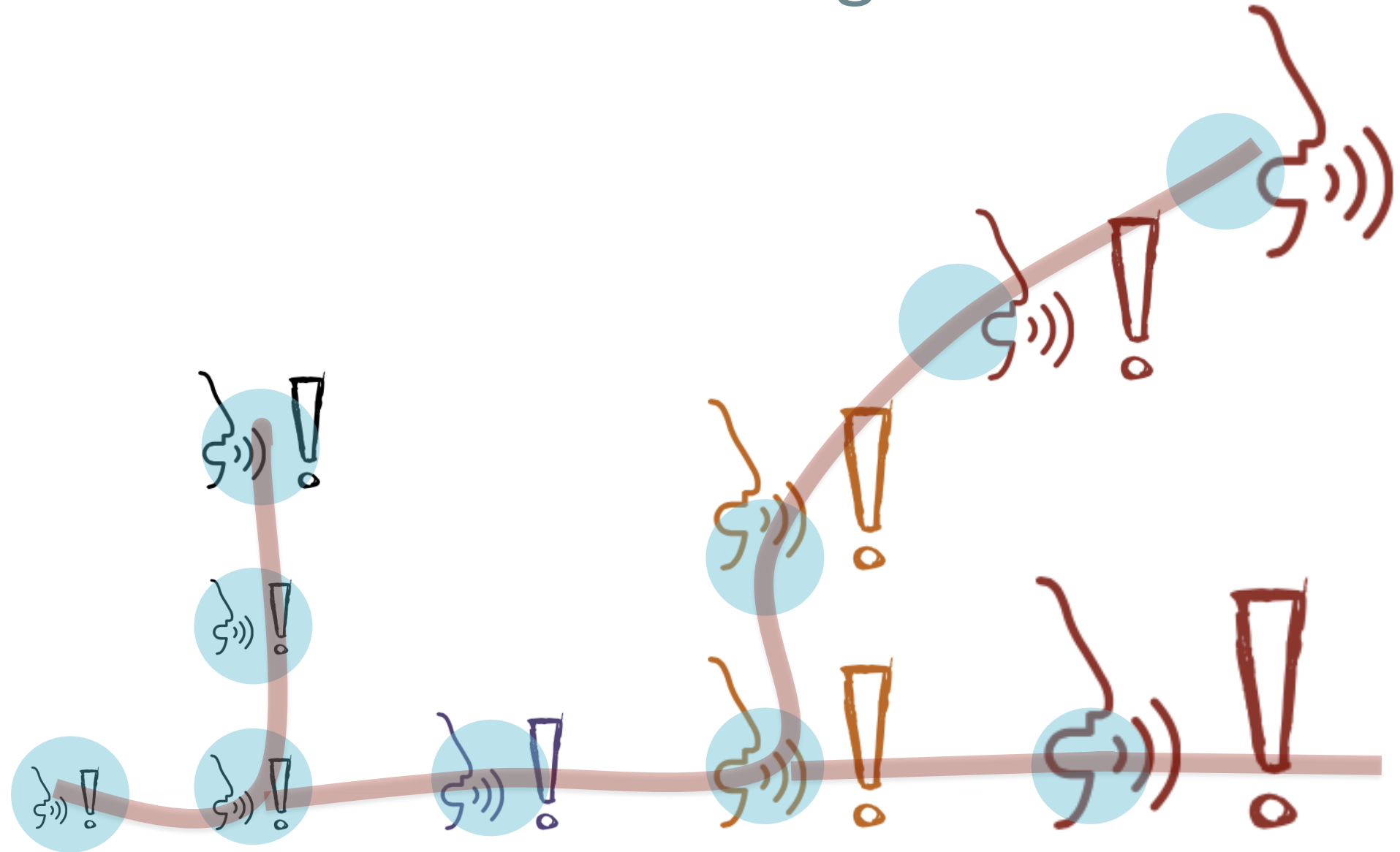


I can feel it, too!

- Narratives replace own experiences
- Observing others being hurt elicits pain responses (sensumotoric contagion, Avenanti et al., 2010)

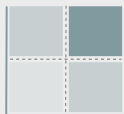


Social contagion



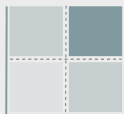
Social contagion? Immunize!

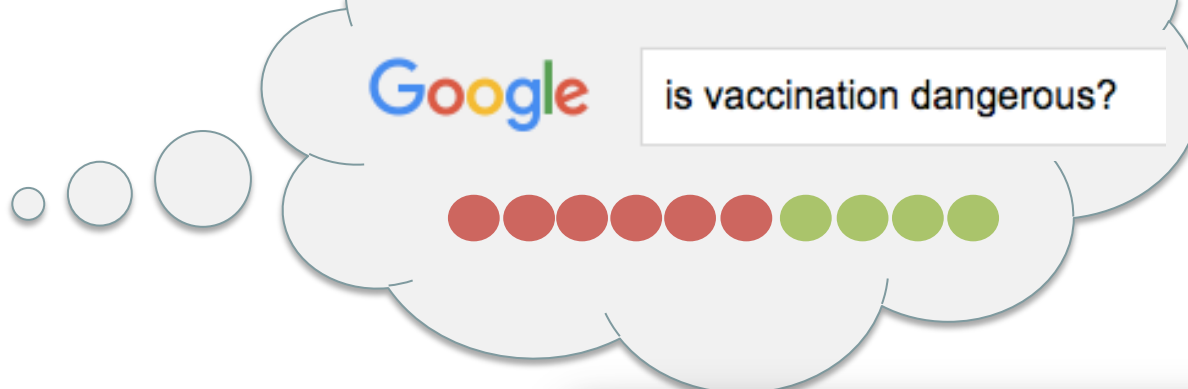
- How to facilitate an unbiased decision process?
 - Cognitive debiasing / disclaimer
 - Stopping automatic processing
 - Correcting the decision process (slightly)
- Narratives about diseases
 - Can lead to omission of vaccination
 - Contradicting (narrative) information
 - Omission bias
 - What if you have an agenda?



Can we prevent contagion? Part I

- Parents search on the Internet when they feel that they have too little information (Evans et al., 2001; Downs et al., 2008)
- Parents tend to search more for narratives about adverse events when they already perceive high vaccination risks (Betsch & Renkewitz, 2009)





[Discover The Many Dangers Of Vaccines and Vaccination](http://www.stopmandatoryvaccination.com/vaccine-dangers/)
www.stopmandatoryvaccination.com/vaccine-dangers/ ▼
And therefore it should be undertaken only after careful consideration of its risks versus benefits. The dangers of vaccines are real, can be substantial and ...

[Fact or Fiction?: Vaccines Are Dangerous](http://www.scientificamerican.com/article/2015-06-06-vaccines-are-dangerous/) Scientific American
www.scientificamerican.com/article/2015-06-06-vaccines-are-dangerous/ ▼
June 6, 2015 - Vaccines A educate-yourself.org/vcd/ ▼
negative side effects are r educate-yourself.org/vcd/ ▼
The dangers of vaccinations to your child's long term health prospects and longevity itself far outweigh any potential benefits touted by the pharmaceutical ...

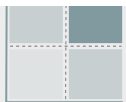
[Benefits vs. Risks](http://www.immunizeforgood.com/benefits-vs-risks/)
www.immunizeforgood.com/benefits-vs-risks/ ▼
natural to want to unde benefits are invisible. You n 9, 2011 - You can vaccinate and still get the illness. ... doctor a doctor who was more aware of vaccine risks, doing lots of research that spanned months ...

[U.S. Government S](http://articles.mercola.com/2011-10-27-14-Dangerous-Vaccine-Myths-Debunked/)
[articles.mercola.com/.../](http://articles.mercola.com/2011-10-27-14-Dangerous-Vaccine-Myths-Debunked/) ▼
October 27, 2011 - 14 Danger 10 Vaccine Myths—Busted | Parenting
er findings revealed: S www.parenting.com/article/10-vaccine-myths---busted ▼
influenza, hepatitis B, mer at high immunization rates are necessary to keep diseases like measles and even polio from making a dangerous comeback. Here are ten myths about ...
anaphylaxis (severe, pote

[Six Reasons To S](http://www.thehealthyhomeeconomist.com/six-reasons-to-stop-worrying-about-vaccine-myths/)
[www.thehealthyhomeec](http://www.thehealthyhomeeconomist.com/six-reasons-to-stop-worrying-about-vaccine-myths/) ▼
Six reasons why many parents distrust these vaccines; worried about the potential for risks and that most of our biggest fears ...

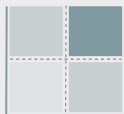
[Parents | Infant Immunizations Frequently Asked Questions | ...](http://www.cdc.gov/vaccines/parents/parent-questions.html)
www.cdc.gov/vaccines/parents/parent-questions.html ▼
Apr 15, 2016 - A: Yes. Vaccines are very safe. The United States' long-standing vaccine safety system ensures that vaccines are as safe as possible. Currently ...

Multiple Vaccines. Danger!
eive from concerned parents indicate ad at once -- are ...



Can we prevent contagion? Part II

- Information disseminated by other parents is highly credible (Gardner et al., 2010)
- There are hardly any reports about „no side-effects after vaccination“ on the Internet (Betsch, Brewer et al., 2012)



About



Mission

Voices for Vaccines is a parent-led organization that supports and advocates for on-time vaccination and the reduction of vaccine-preventable disease. Although the majority of parents choose to immunize their children against disease, most of us do not speak out about our decisions because it seems to us common sense. Unfortunately, increasing numbers of parents are choosing not to immunize or to under-immunize their children, which has led to increasing rates of vaccine-preventable diseases and needless suffering.

At Voices for Vaccines, our mission is to provide families three crucial tools:

- Evidence-based information about the safety and importance of immunization
- A vibrant community of parents who are passionate about preventing disease, disability, and death by supporting and encouraging sound vaccine policies and practices at both the state and national levels
- An opportunity to join the discussion and to actively advocate for on-time immunization

Leaving the Anti-Vaccine Movement



I can't tell you how I became pro-vaccine without first telling you how I became anti-vaccine.

When my oldest daughter was about four months old, I discovered "crunchy" parenting. I entered a world full of cloth diapers, "intactivism," and home birth. I made a lot of new friends who shared my beliefs about peaceful attachment parenting, and I started to notice a trend – many of these same friends also didn't vaccinate. I discussed it one day with a real-life friend, who told me I should look up vaccine ingredients, read the package inserts, and check out the adverse events reported on VAERS.

my anti-vaccine friends had put ideas into my head, such as not trusting government websites. I was forced to rely on whatever I could find while Googling

...

Anti-vaccine people had told me countless times that safety studies on vaccines were extremely lacking, but I was able to pull up hundreds of studies with just a few PubMed searches.

...

Both handled their first round of shots just fine, without even a fever.

...

I now view the anti-vaccine movement as a sort of cult



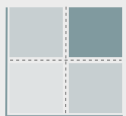
We believe that by choosing to vaccinate our son that we are not only protecting him, but all the other children he interacts with on a daily basis.

Modern science has allowed us to protect all of our children...and for that we are grateful.

Lisa

Centennial, CO

Kids: 1





Who am I ?



LORE'S

[HOMEPAGE](#)

[PRESENTATION](#)

[83 DAYS'DIARY](#)

[WHOOPIING COUGH](#)

[PICTURES](#)

[OTHER LITTLE VICTIMS](#)

[POSTER](#)

[IN THE MEDIA](#)

[AGENDA](#)

[RELIABLE SITES](#)

[ABOUT US CONTACT](#)

[AUDE*, MY LITTLE
ANGEL SISTER](#)

Hello, my name is LORE and life gave me only 83 days....and the last 18 ones were a fight against whooping cough, fight that I lost.

Mum and Dad tried to find some fellows and testimonies on the web and they created this site to help and to give assistance to other parents who lost their child on whooping cough. Furthermore, this site will also provide exclusively science-based information on whooping cough, and will insist on the importance of the cocoon vaccination for adults in order to minimize the risks of transmitting the disease to fragile babies.

Because this is exactly what happened to me, I have been infected by my closest relatives. One of them came home with a bad cold and contaminated the whole household. No one of them knew that that cold had a name : whooping cough !

As adults are not vaccinated anymore, they can carry the bacterium to other people. And for a baby too young to be vaccinated, this means serious consequences and also the death...



**REVACCINATE THE ADULTS IN ORDER
TO PROTECT VULNERABLE BABIES
AGAINST THE SILENT KILLER**

MAIN OTHER VACCINE PREVENTABLE DISEASES

(BACTERIAL)

CHOLERA
DIPHTERIA
THYPHOID FEVER
H. INFLUENZAE TYPE B
MENINGOCOCCAL
PNEUMOCOCCAL
TETANUS
TUBERCULOSIS

(VIRAL)

JAPANESE ENCEPHALITIS
YELLOW FEVER
INFLUENZA
HEPATITIS A
HEPATITIS B
MUMPS
POLIOMYELITIS
RABIES
MEASLES
RUBELLA
VARICELLA



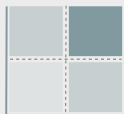
Die GRIPPE habe ich mir im Krankenhaus geholt.

„Wegen einer gerissenen Sehne musste ich im vergangenen Herbst im Krankenhaus operiert werden. Bei der Aufnahme ging es mir gut, auch die Operation verlief super.

Nach der Operation setzte dann plötzlich hohes Fieber ein, ich fing stark an zu husten und meine Nase war verstopft, sodass ich kaum Luft bekam. Die Laborwerte bestätigten eine **saisonale INFLUENZA**.

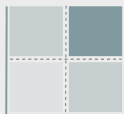
In diesem Jahr lasse ich mich auf jeden Fall impfen, um besser geschützt zu sein!“

Influenza kann auch im Krankenhaus übertragen werden und Patienten infizieren.



How to prevent social contagion

- Be there. Set the stage. Be first.
- Be easy to find.
- Talk about risks and danger of vaccination (not safety only).
- Involve parents to advocate for vaccination.
- Try „process narratives“.
- Educate about the techniques of the anti-vaccination lobby.



Thank you!

www.cornelia-betsch.de



UNIVERSITÄT
ERFURT

CEREB

Center for Empirical Research
in Economics and Behavioral Sciences



Psychology &
Infectious
Diseases Lab

Other PIDI projects

- Debiasing the influence of single narrative reports in a data-base of vaccine adverse events
- Measuring vaccine hesitancy with a 10-item tool
- Overcoming influenza vaccine hesitancy in people 60+
- Using game theory to understand vaccine hesitancy and to test interventions

Narratives about VAE increase risk but (almost) do not decrease it

