



AMETHIST

AMETHIST@Penn:
Achieving Maternal
Empowerment
and Transforming
Health through
Implementation
Science and
Training

RESOURCE

EVIDENCE-BASED STRATEGIES FOR CORRECTING HEALTH MISINFORMATION

Psychological underpinnings of misinformation

- Misbeliefs are difficult to change once established because they are linked to our innate tendency to protect our preexisting attitudes.
- Attitudes are simply our positive or negative evaluation of experiences.
- We are motivated to resist information inconsistent with our existing beliefs to avoid cognitive dissonance, a feeling of mental discomfort due to conflicting attitudes or beliefs; this is why counterarguing and defensive behavior occurs.
- Defensive reactions toward a message correction can diminish the correction effects.
- However, the more we care about an issue, the more likely we are to continue updating our knowledge, especially when factual correction is offered (Walter et al., 2021).

4 types of misinformation correction strategy

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1. PREBUNKING

Prebunking, or “psychological inoculation,” is a proactive strategy to combat misinformation by warning people about manipulative tactics *before* they encounter them. It is the preferred method of misinformation correction. Just as people can be protected from a biological virus, so too can they be protected from attempts at persuasion or misinformation.

Based on Inoculation Theory (McGuire 1961/64)

Two components: Forewarning and Refutations

Forewarning: Alerts an individual of a forthcoming persuasive attempt

Example: Young women frequently encounter misinformation about contraception online. Telling them that social media algorithms may expose them to inaccurate birth control information alerts them to an upcoming persuasive threat.

Efficacy support: Providing clear guidance on where to find evidence-based contraceptive information strengthens their ability to resist misinformation.

Refutations: Exposing individuals to a weakened version of the claim that will be used to influence them alongside arguments that they can use to counter the claim.

Example: “Some people argue that vaccines during pregnancy harm fetal development.” This mimics the vaccine and autism claim.

Provide counterarguments: Ground counterarguments in scientific consensus, explaining documented protective benefits of vaccination.

Prebunking “do’s” and “do not’s”

1. Messages that debunk X inoculate can have backfire effects (Amazeen et al., 2022).
2. Sometimes, inoculation messages are only protective among those with preexisting healthy attitudes. Conduct an audience analysis or segmentation about previously held beliefs before disseminating mass messaging.
3. Don’t scare the viewer. Too much negative information could create cynical outlook on media content and prime suspicion beyond a constructive level (Hameleers, 2024).

2. DEBUNKING

Using prebunking is not always an option. Debunking involves presenting corrective messages that establish the prior message was misinformation.

Debunking approaches (Morgan et al., 2025)

Compared:

1. A myth followed by a fact
2. A fact, followed by a myth, followed by a fact
3. A fact only
4. Control

Myth followed by a fact message strengthened COVID-19 vaccination intentions; no backfire effect associated with presenting the misinformation first in the communication.



Debunking “do’s” and “do not’s”

1. Don’t strengthen the false story; strengthen the true story.
 - Do **not** restate the false claim in detail.
 - Do **not** explain all the reasons someone might think it’s true.
 - Do **not** walk audiences through the misinformation’s internal logic.
2. Do replace misinformation with a detailed, alternative explanation.
 - Give people enough structure to see the flaw.
 - Encourage them to mentally articulate why the claim doesn’t hold.
 - Let them build a replacement mental model that actively rejects the false one.
 - New detailed information should include:
 - A clear alternative causal explanation.
 - Specific facts that explain what actually happened and why.
 - Enough coherence to let people build new mental models that can compete with the false one.
3. Don’t just slap a “false” sticker on it.
 - Why just saying “it’s wrong” fails:
 - Labeling misinformation as incorrect gives people *no new mental structure*.
 - The original false explanation stays intact because nothing meaningful took its place.
 - People may accept the correction superficially but still rely on the misinformation when reasoning later.

3. NARRATIVE MESSAGING

Narratives can reduce resistance and offer a story with characters in a chronological way.

Narratives

“Narrative transportation” is theorized to involve a distinct psychological process as we spend less time judging the accuracy of the claims and more time on the story.

- Narratives inhibit resistance (Ratcliff & Sun, 2020).
- Transportation occupies cognitive resources with mental stimulation.
- Allows people to explore alternative perspectives, especially when there is a connection to a character.

However, there is some mixed evidence for narratives

- Nonnarrative correction is sometimes evaluated as more credible (Huang & Wang, 2022).
- For pregnant women with skeptical towards vaccination, narratives (vs. expository) elicited stronger negative emotions, leading to decreased debunking efficacy and the intention to seek information (Jheng et al., 2025).

Narrative “do’s” and “do not’s”

- Do **not** make the narrative long. With online media especially, 1-2 minutes is good.
- Develop story characters with a few details.
- Conduct an audience analysis or segmentation to understand your audience’s preferences and previously held beliefs before widely disseminating a message. This information will guide you in selecting statistical/expository messaging or narratives.



4. TWO-SIDED MESSAGES

Two-sided messages occur when the speaker mentions both side of the argument, while still advocating for one.

- Based in the persuasion and advertising literature.
- Two-sided messages increase trustworthiness and authenticity.
- Corrections also fare better when recipients are likely familiar with both sides of the issue and when the issue was not politically polarized (Chan & Albarracín, 2022).
- In the COVID-19 vaccines example, the authors note that side effects may happen but resolve in a few days. Every other “vaccine fact” message takes a strictly debunking approach.

Two-sided messages “do’s” and “do not’s”

- Balance each side of the message but still be clear about which argument you are supporting.
- Validate your audience and show compassion.

VACCINE MYTH	VACCINE FACT
It was rushed and isn't safe	Researchers took no safety shortcuts. Large studies show the vaccine is safe.
It changes your DNA	It's impossible for the vaccine to change your DNA
It can give you COVID-19	The vaccine doesn't contain a live virus strain
It contains egg protein	It doesn't have egg proteins and can be given to people with egg allergies
It causes severe side effects	For most, the vaccine causes mild side effects that resolve in a few days
It makes women infertile	There is no evidence that the vaccine causes infertility

SOURCE: Sanford Health

General Tips for Misinformation Correction and Effective Science Communication

- Expert sources are still more effective in correcting misinformation than lay people or regular users online.
- Perceived similarity can reshape who we think is an expert or who is credible. Perceived similarity, or homophily, refers to the tendency of individuals to trust sources similar to themselves in race, class, values, or experiences (Rogers, 2003).
 - Generally, we are more likely to trust information provided by those who we perceive to be similar to us, even when they do not possess medical expertise
 - Perceptions of similarity could include things as simple as dress, hobbies, or educational status.
- Offer sources and links so that individuals can verify your information. Telling your audience to review the additional resources could prompt them to engage further.
- Offering a coherent alternative explanation for the misinformation boosts the power of corrections.
 - Corrections can state what is false.
- Multiple corrections reinforce the message, leading to reduced misperceptions.
- Misinformation should be corrected early if possible or tied to “windows of opportunity” (i.e., tied to current events / creating urgency).

Customizing Misinformation Correction

- Audience-analysis and segmentation is necessary.
- Customize misinformation correction efforts depending on the recipients’ degree of misinformation belief strength.
- As the strength of a person’s attitudes and misinformed beliefs increased, the relative benefit of using a two-sided message in promoting openness was enhanced (Xu & Petty, 2025).
- Simple rebuttals vs. elaborations
 - Simple rebuttals are more effective when people have relatively limited knowledge on the topic.
 - Cognitive elaborations are more likely to reduce misconceptions when they provide contextual information that both debunks the falsehood and fills gaps in existing mental models.



- Topic matters
 - The effects of myths about genetically modified produce, nutrition, and reproductive health were more effectively attenuated by corrective interventions than misinformation about Zika virus, measles, HIV, and other communicable diseases (those are that greater perceived severe consequences are more difficult to correct) (Walter et al., 2021).
- Persuasive intent matters
 - If people are highly aware of the persuasive intent of corrective messages, especially when presented after the misinformation, the effectiveness may be impaired.
 - Avoid being salesy or pushy.

Readings

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