

Building resilience to vaccine misinformation through critical thinking, humor, and gamification

JOHN COOK

 MONASH
CLIMATE CHANGE
COMMUNICATION
RESEARCH HUB

 **Skeptical
Science**

VACCINE MISINFORMATION MANAGEMENT FIELD GUIDE



Yale *Institute for Global Health*



1

**PREPARATION
PHASE**

2

**LISTEN
PHASE**

3

**UNDERSTAND
PHASE**

4

**ENGAGE
PHASE**

1
**PREPARATION
PHASE**

2
**LISTEN
PHASE**

3
**UNDERSTAND
PHASE**

4
**ENGAGE
PHASE**



INOCULATION THEORY

Fact-based

Logic-based

Effective strategies for rebutting science denialism in public discussions

Philipp Schmid ^{1,2*} and Cornelia Betsch ^{1,2}

Science deniers question scientific milestones and spread misinformation, contradicting decades of scientific endeavour. Advocates for science need effective rebuttal strategies and are concerned about backfire effects in public debates. We conducted six experiments to assess how to mitigate the influence of a denier on the audience. An internal meta-analysis across all the experiments revealed that not responding to science deniers has a negative effect on attitudes towards behaviours favoured by science (for example, vaccination) and intentions to perform these behaviours. Providing the facts about the topic or uncovering the rhetorical techniques typical for denialism had positive effects. We found no evidence that complex combinations of topic and technique rebuttals are more effective than single strategies, nor that rebutting science denialism in public discussions backfires, not even in vulnerable groups (for example, US conservatives). As science deniers use the same rhetoric across domains, uncovering their rhetorical techniques is an effective and economic addition to the advocates' toolbox.

Topic rebuttal

Threat of disease

Safety

Alternatives

Trust

Effectiveness

Selectivity

Science denier: Mr Miller

The *lack of safety* is an important issue of the dysomera vaccine. The side effects and risks of the vaccine are incalculable. As a patient, you do not know how the body reacts to the vaccine before administration. Even if you feel healthy immediately after the shot, harmful substances may have entered your body. Doctors cannot guarantee in advance that there will not be any complications. In my opinion, you cannot expect any fellow citizen to vaccinate as long as the vaccine is not 100% safe. Surely it is not too much to ask that a product that is injected into a healthy human body is 100% safe.

Impossible expectation

Science advocate: Mr Smith

Mr Miller demands 100% safety from the vaccine against dysomera. In science, this argument is called 'impossible expectation'. It is an impossible expectation because science can never guarantee 100% safety for any medical product, neither for aspirin nor for heart surgery. Any treatment poses a residual risk of complications for patients either during or after treatment. *The scientific evidence is clear; the vaccine against dysomera is a safe way to avoid the disease. The risk of dysomera by far exceeds the risk of vaccination. And please let me add the following regarding the safety of the vaccine: we follow a very strict protocol to ensure the high quality of vaccines in the United States. This is also demonstrated by the fact that every batch of the vaccine against dysomera is constantly monitored and independently screened by official control laboratories.* Let us stay with the facts: the vaccine improves the health standard of all individuals and that is why we recommend it for citizens of all ages.

Conspiracy theories

Misrepresentation or false logic

Fake experts

Technique rebuttal

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Techniques of Science Denial

F



Fake
Experts

L



Logical
Fallacies

I



Impossible
Expectations

C

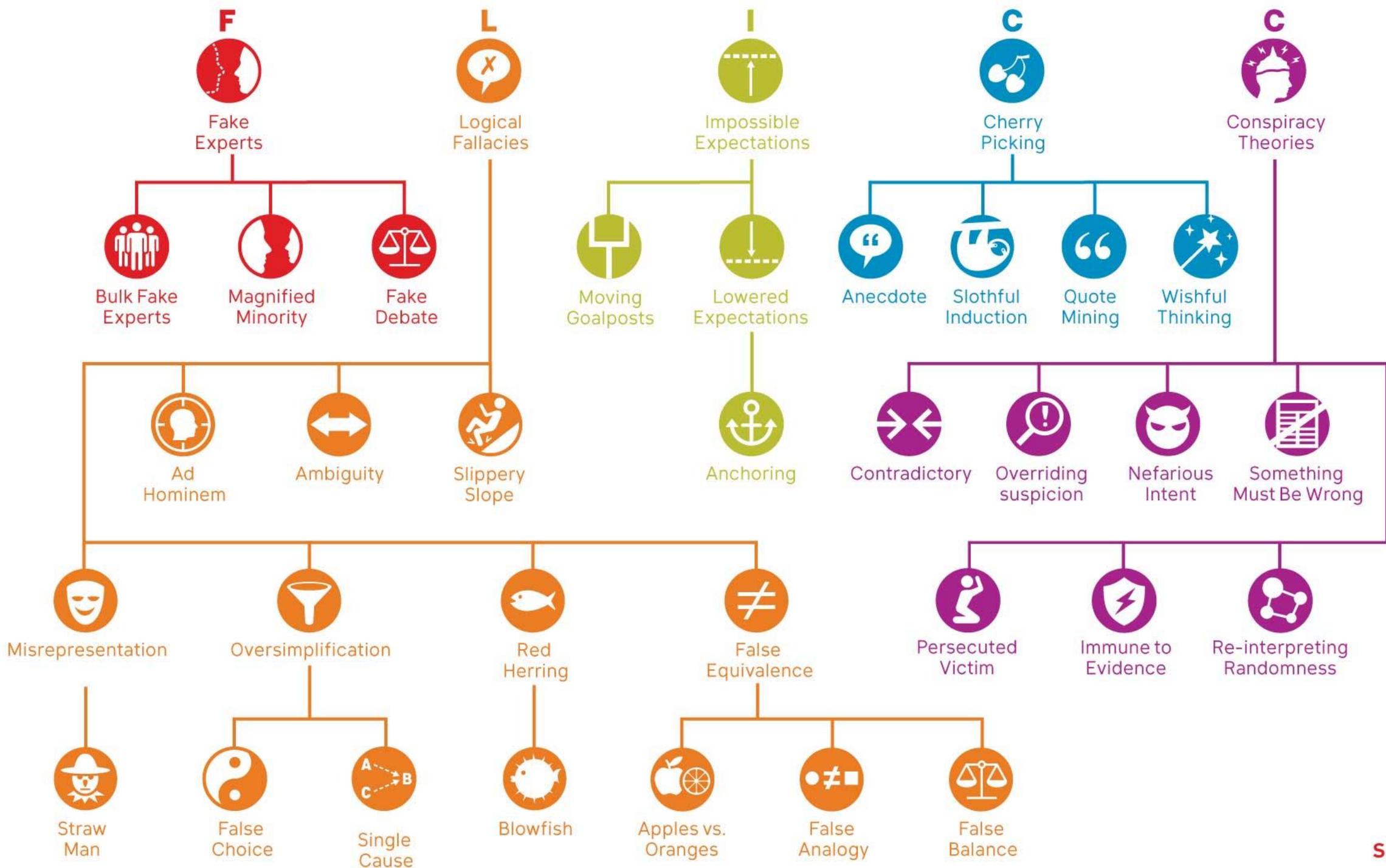


Cherry
Picking

C



Conspiracy
Theories



The COVID-19 Vaccine COMMUNICATION HANDBOOK

A practical guide for improving vaccine
communication and fighting misinformation

Fact	Myth	Fallacy
<p>Vaccines are generally a safe way to prevent vaccine-preventable diseases.</p>	<p>I am not against vaccination, but it needs to be 100% safe.</p>	<p>Impossible expectations: It is unrealistic to expect that any medical treatment is 100% free of side-effects.</p>
<p>Vaccines are one of the most important inventions in human history. They save more than 5 lives every minute.</p>	<p>Natural prevention is so much better than artificial inventions.</p>	<p>Appeal to nature: Just because something is natural doesn't make it good or effective, just as being 'unnatural' (e.g., scientifically developed medicine) doesn't make it bad.</p>
<p>COVID-19 is a highly infectious and deadly disease. By the end of 2020, it had caused over 1.7 million deaths globally.</p>	<p>COVID-19 is just another flu!</p>	<p>Slothful induction: Ignores that COVID-19 is far deadlier than the flu (e.g., by a factor of 3 among hospitalized patients overall and by a factor of 10 among adolescents⁷⁶).</p>

An Eye Tracking Approach to Understanding Misinformation and Correction Strategies on Social Media: The Mediating Role of Attention and Credibility to Reduce HPV Vaccine Misperceptions

Sojung Claire Kim ^a, Emily K. Vraga ^b, and John Cook ^c

ABSTRACT

This study uses an unobtrusive eye tracking approach to examine understudied psychological mechanisms – message attention and credibility – when people are exposed to misinformation and correction on social media. We contrast humor versus non-humor correction strategies that point out rhetorical flaws in misinformation regarding the HPV vaccine, which was selected for its relevance and impact on public health. We randomly assigned participants to one of two experimental conditions: humor correction versus non-humor correction. Our analyses revealed that the humor correction increased attention to the image portion of the correction tweet, and this attention indirectly lowered HPV misperceptions by reducing the credibility of the misinformation tweet. The study also found that the non-humor correction outperformed the humor correction in reducing misperceptions via its higher credibility ratings. Practical implications for correcting misinformation on social media are discussed.



Hunter Lee
@H_P_Lee



Yet another teenager is left paralyzed after suffering a reaction from the "safe" HPV vaccine. How many more injuries do we need before we recognize it's causing these injuries? #HPV



Adrian Williams @AdrianWilliamsEsq · 2h

Large-scale scientific studies find no link between HPV vaccine and auto-immune symptoms. You're mistaking correlation with causation. A vaccination and an injury happening close together doesn't mean one causes the other.

**LOGICAL FALLACY:
Correlation implies causation**





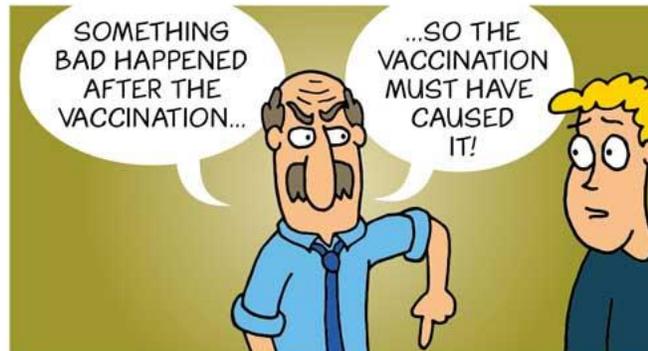
Hunter Lee
@H_P_Lee

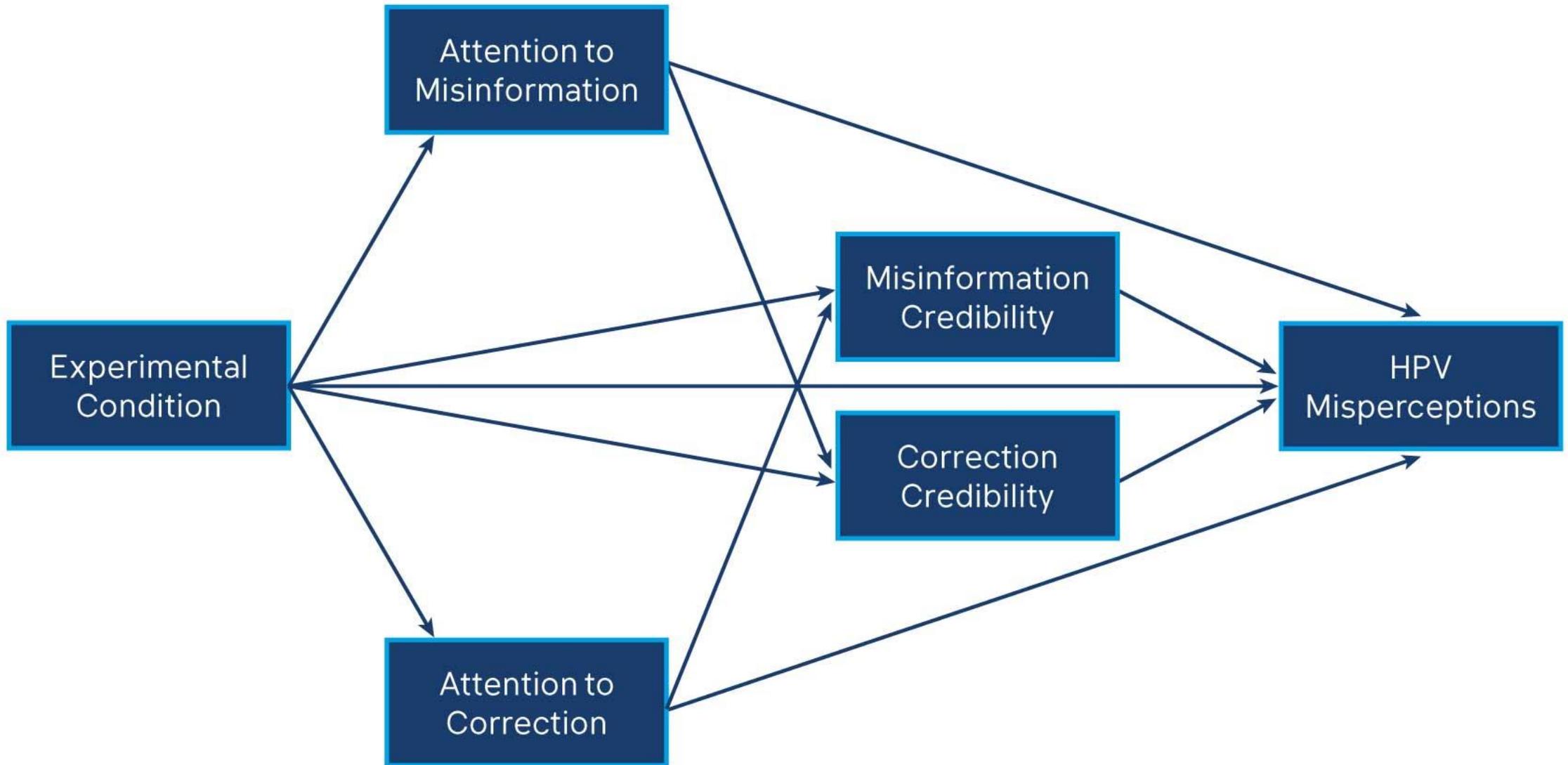
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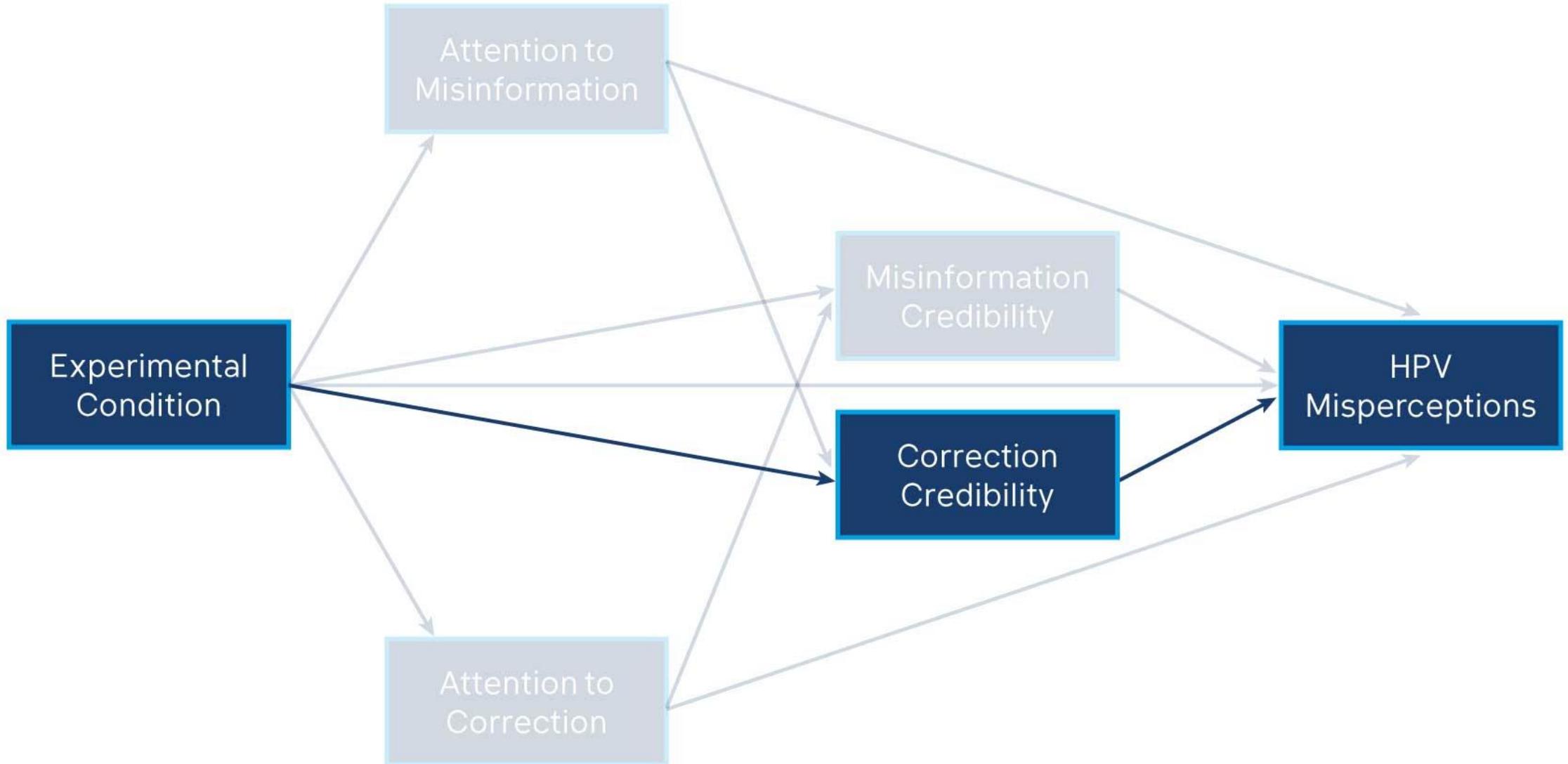
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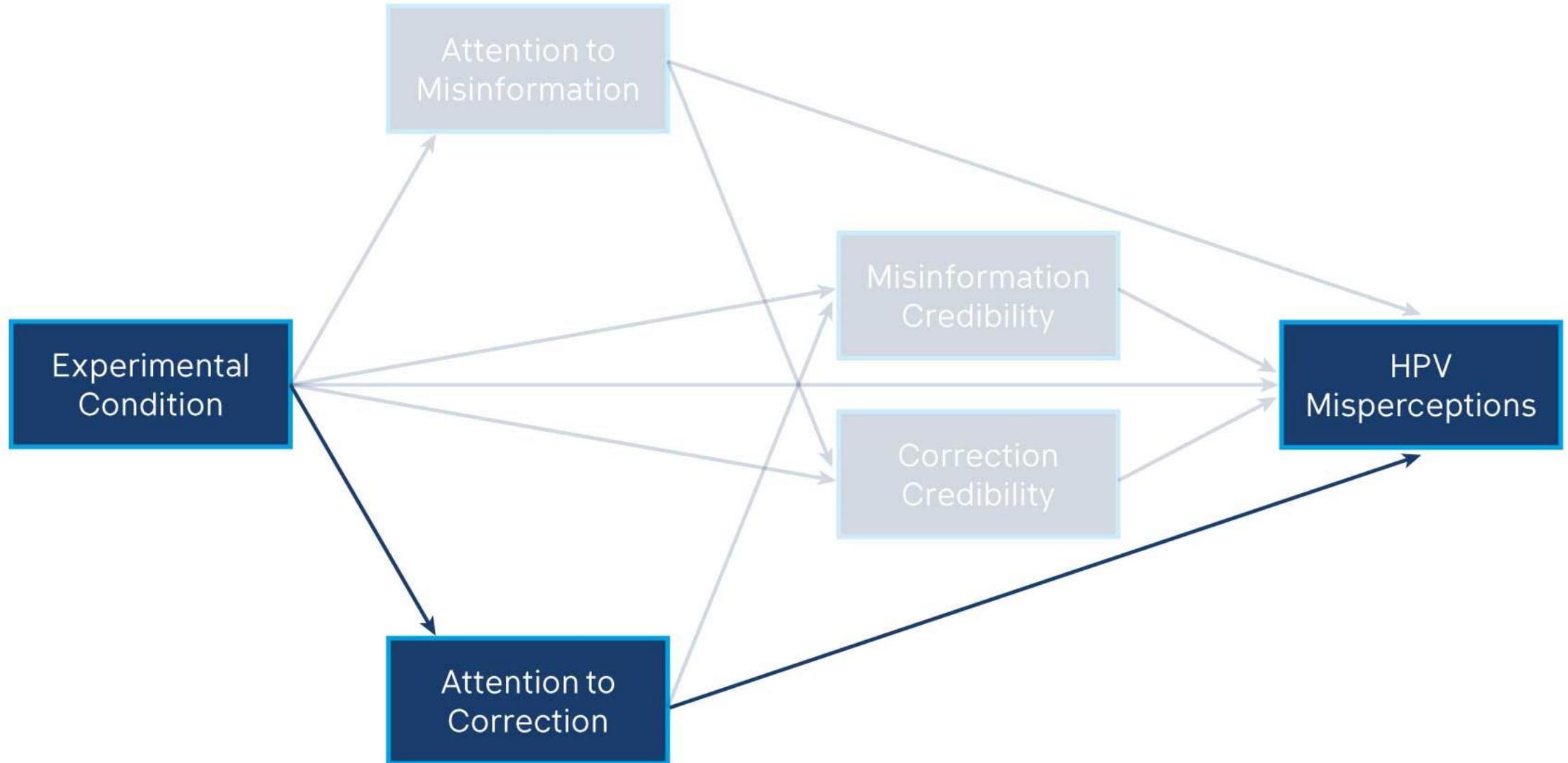


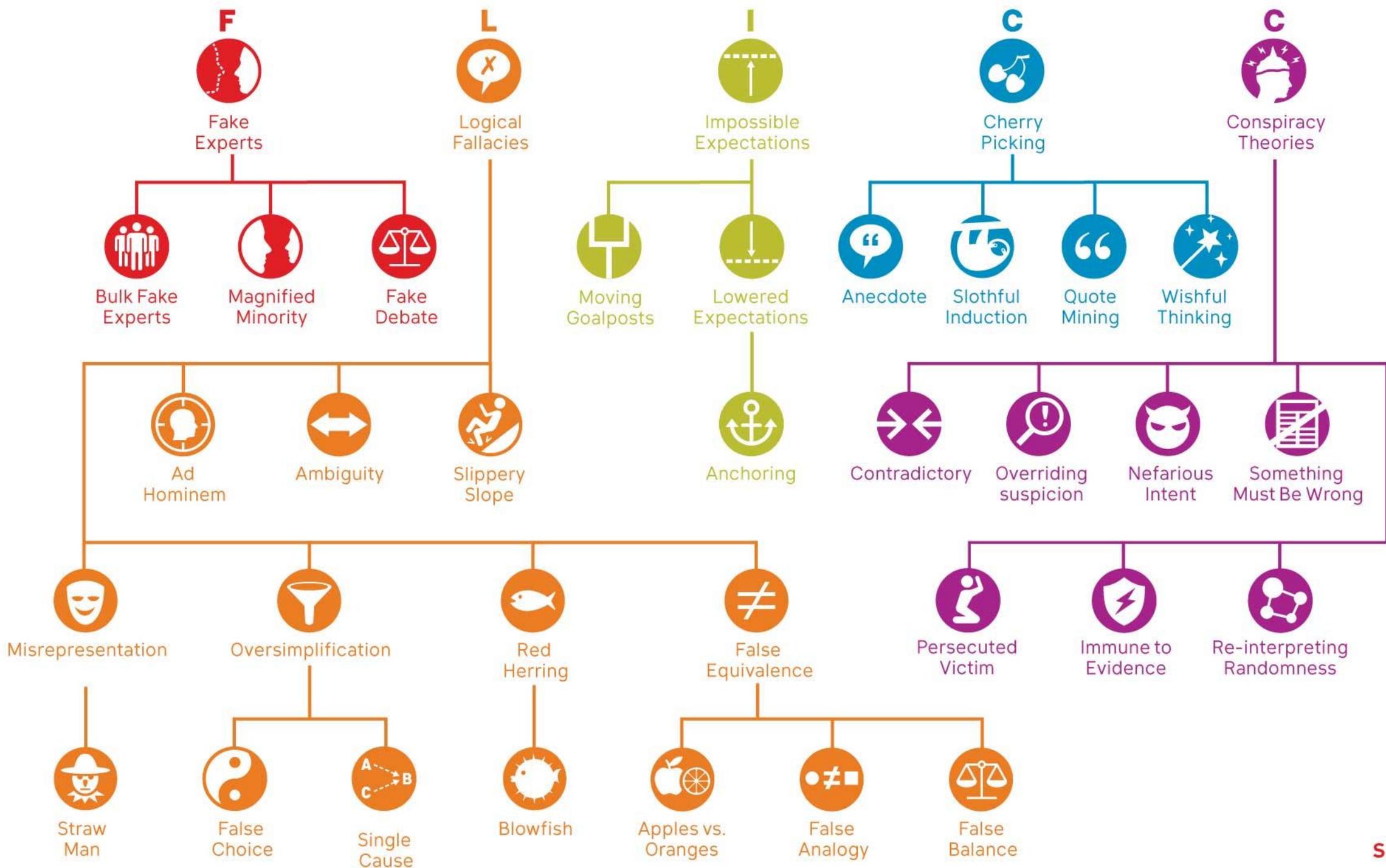


Non-Humorous Condition



Humorous Condition





Challenges of inoculation

1. Psychological: critical thinking is hard!
2. Structural: how to reach siloed communities.

THE NEW YORK TIMES BESTSELLER

THINKING,
FAST AND SLOW



DANIEL
KAHNEMAN

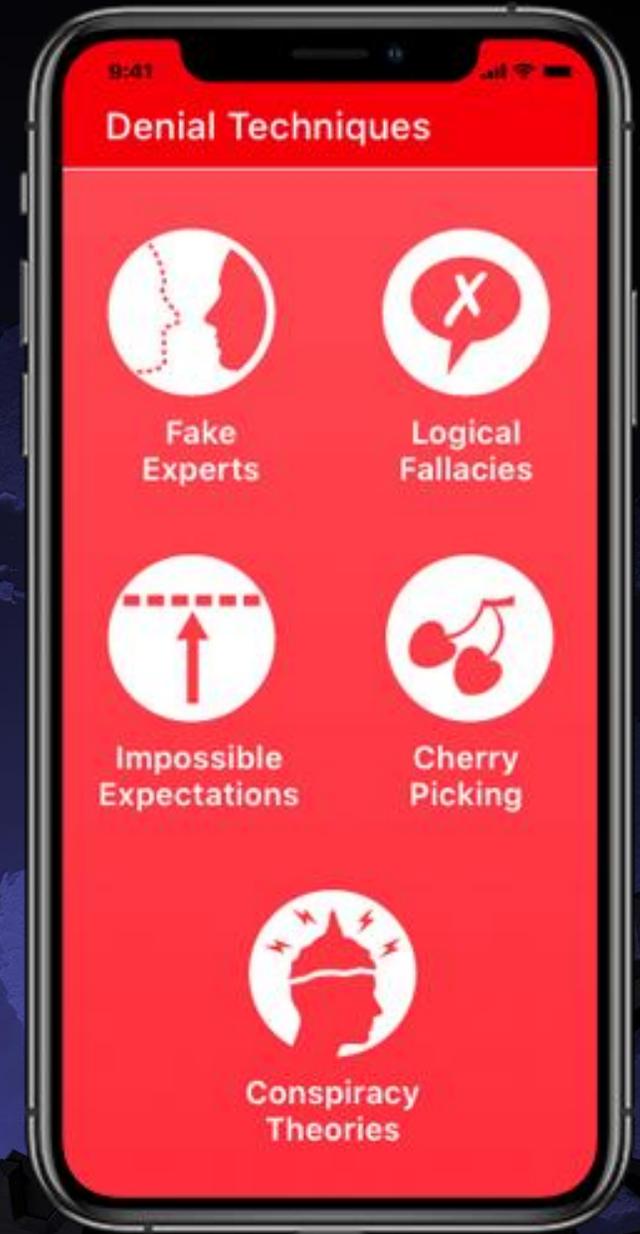
WINNER OF THE NOBEL PRIZE IN ECONOMICS

"[A] masterpiece . . . This is one of the greatest and most engaging collections of insights into the human mind I have read." —WILLIAM EASTERLY, *Financial Times*

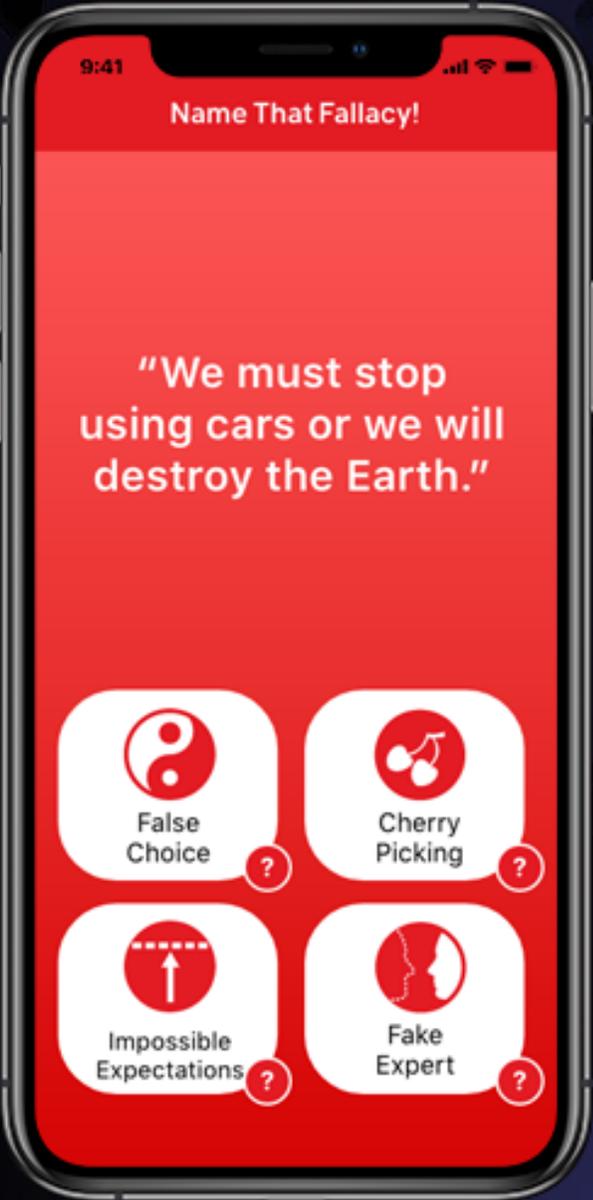
Types of thinking

- Fast thinking: instant, effortless reactions
- Slow thinking: reasoning through difficult problems
- Expert heuristics: experts' quick responses to difficult problems after much practice

<http://crankyuncle.com>







Challenges of inoculation

1. Psychological: critical thinking is hard!
2. Structural: how to reach siloed communities.

<http://sks.to/teachersguide>

- Explains the science behind the Cranky Uncle game
- Resources for class activities
- Sign up for preview (and to indicate interest in using game) at <https://sks.to/crankyclass>

the Teachers' Guide to Cranky Uncle

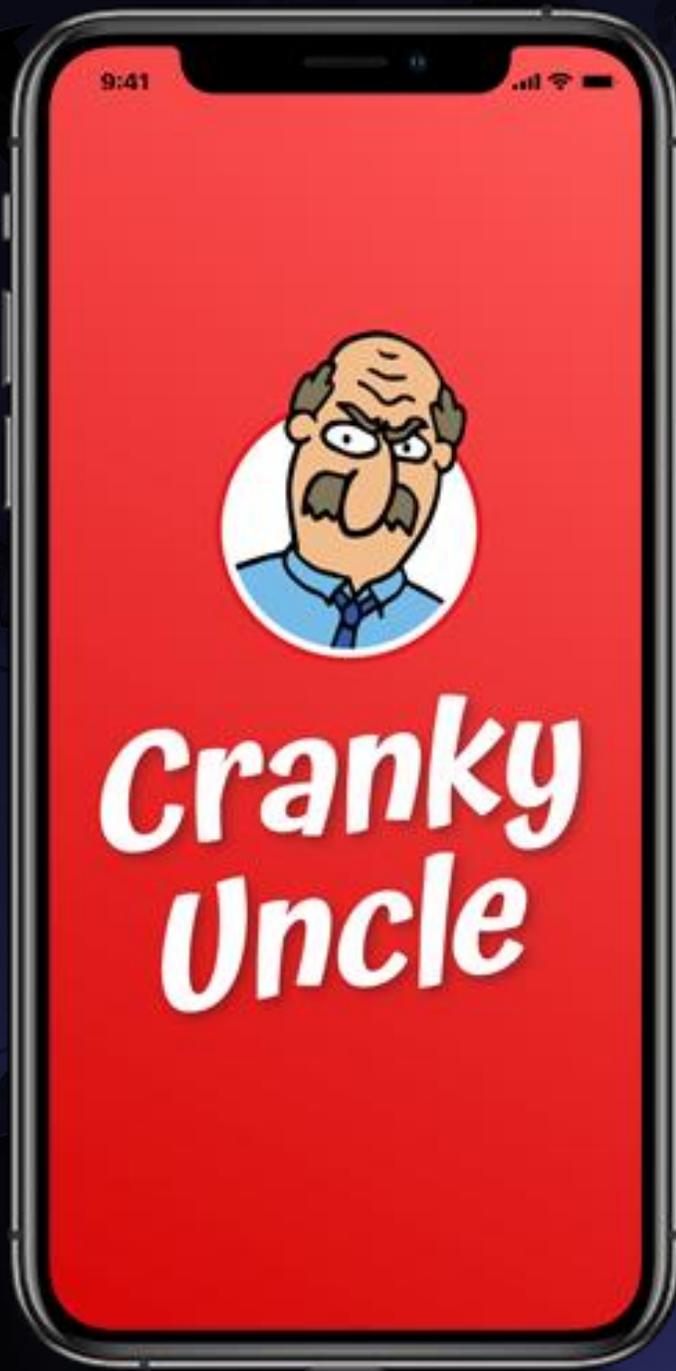
I PREFER
OLD SCHOOL!



JOHN COOK

Next steps

1. Expansion packs (e.g., focused on vaccination)
2. Social elements (player vs. player contests)
3. How to have difficult conversations
(cordial cousin)



iPhone

sks.to/crankyiphone

Android

sks.to/crankyandroid

Browser

app.crankyuncle.info