

総務省「デジタル空間における情報流通の健全性確保の在り方に関する検討会」


デジタル空間における情報流通の 健全性の確保の在り方

— 心理学領域の動向 —

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アメリカ心理学会の声明

<https://www.apa.org/pubs/reports/health-misinformation>

- 目的) 3つの重要な問いについての共通見解を提供し、これらの議論を明確にする
 1. なぜ人々は誤情報を信じ、それにもとづいて行動しやすいのか、その心理的要因はなにか？
 2. なぜ、どのように誤情報が広がるのか？
 3. 誤情報に対抗するためにどのような介入が効果的か？
- 誤情報による脅威に対処するための8つの推奨事項

Recommendations

RECOMMENDATION 1
Avoid repeating misinformation without including a correction.

The repetition of false claims increases belief in those claims, a phenomenon known as the illusory truth effect. People of all ages are susceptible to illusory truth, even when they already have relevant prior knowledge about the topic. When media sources, political elites, or celebrities repeat misinformation, their influence and repetition can perpetuate false beliefs. Repeating misinformation is necessary only when actively correcting a falsehood. In these cases, the falsehood should be repeated briefly, with the correction featured more prominently than the falsehood itself.

RECOMMENDATION 2
Collaborate with social media companies to understand and reduce the spread of harmful misinformation.

Most misinformation on social media is shared by very few users, even during public health emergencies. These “super-spreaders” can play an outsized role in distributing misinformation. Social media “echo chambers” bind and isolate communities with similar beliefs, which aids the spread of falsehoods and impedes the spread of factual corrections. On social media, sensational, moral-emotional, and derogatory content about the “other side” can spread faster than neutral or positive content. Scientists, policymakers, and public health professionals should work with online platforms to understand and harness the incentive structures of social media to reduce the spread of dangerous misinformation.

RECOMMENDATION 3
Use misinformation correction strategies with tools already proven to promote healthy behaviors.

Psychological science research shows that the link between knowledge and behavior is imperfect. There is strong evidence that curbing misperceptions can change underlying health-related beliefs and attitudes, but it may not be sufficient to change real-world behavior and decision-making. Correcting misinformation with accurate health guidance is vital, but it must happen in concert with evidence-based strategies that promote healthy behaviors (e.g., counseling, skills training, incentives, social norms).

RECOMMENDATION 4
Leverage trusted sources to counter misinformation and provide accurate health information.

People believe and spread misinformation for many reasons: They may find it consistent with their social or political identity, they may fail to consider its accuracy, or they may find it entertaining or rewarding. These motivations are complex and often interrelated. Attempts to correct misinformation and reduce its spread are most successful when the information comes from trusted sources and representatives, including religious, political, and community leaders.

RECOMMENDATION 5
Debunk misinformation often and repeatedly using evidence-based methods.

Research shows that debunking misinformation is generally effective across ages and cultures. However, debunking doesn’t always eliminate misperceptions completely. Corrections should feature prominently with the misinformation so that accurate information is properly stored and retrieved from memory. Debunking is most effective when it comes from trusted sources, provides sufficient detail about why the claim is false, and offers guidance on what is true instead. Because the effectiveness of debunking fades over time, it should be repeated through trusted channels and evidence-based methods.

RECOMMENDATION 6
Prebunk misinformation to inoculate susceptible audiences by building skills and resilience from an early age.

Instead of correcting misinformation after the fact, “prebunking” should be the first line of defense to build public resilience to misinformation in advance. Studies show that psychological inoculation interventions can help people identify individual examples of misinformation or the overarching techniques commonly used in misinformation campaigns. Prebunking can be scaled to reach millions on social media with short videos or messages, or it can be administered in the form of interactive tools involving games or quizzes. However, the effects of prebunking fade over time; regular “boosters” may be necessary to maintain resilience to misinformation, along with media and digital literacy training.

RECOMMENDATION 7
Demand data access and transparency from social media companies for scientific research on misinformation.

Efforts to quantify and understand misinformation on social media are hampered by lack of access to user data from social media companies. Misinformation interventions are rarely tested in real-world settings due to a similar lack of industry cooperation. Publicly available data offer a limited snapshot of exposure, but they cannot explain population and network effects. Researchers need access to the full inventory of social media posts across platforms, along with data revealing how algorithms shape what individual users see. Responsible data sharing could use frameworks currently in use to manage sensitive medical data. Policymakers and health authorities should encourage research partnerships and demand greater oversight and transparency from social media companies to curb the spread of misinformation.

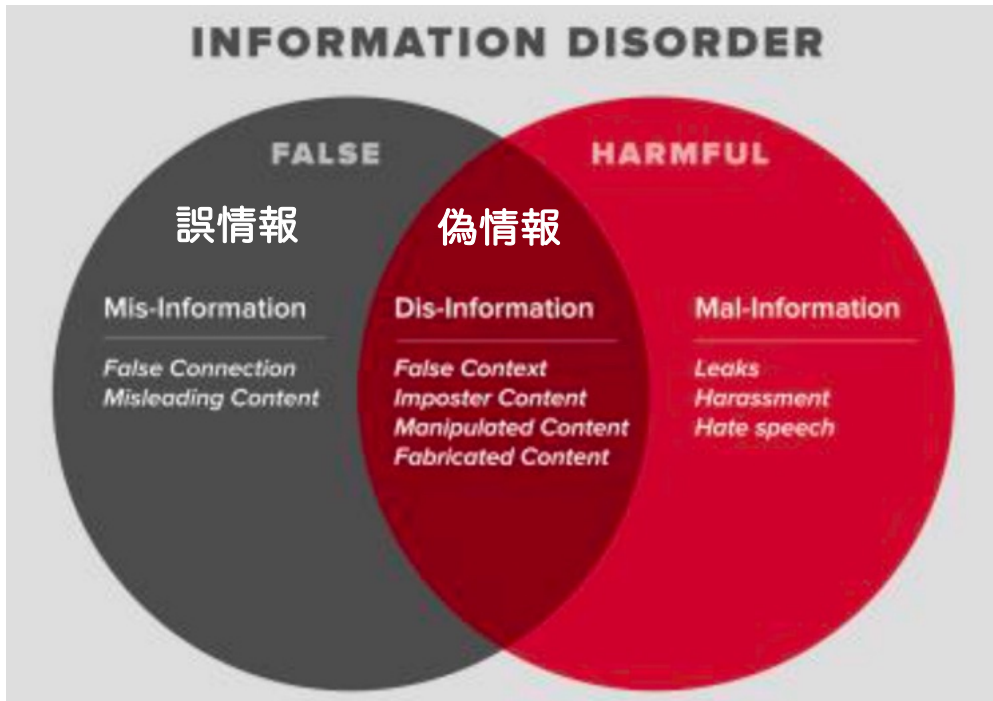
RECOMMENDATION 8
Fund basic and translational research into the psychology of health misinformation, including effective ways to counter it.

Several interventions have been developed to counter health misinformation, but researchers have yet to compare their outcomes, either alone or in combination. There is a need to understand which interventions are effective for specific types of information: What works for one issue may not translate to others. Ideally, these questions would be answered by large-scale trials with representative target audiences in real-world settings. Increased funding opportunities for psychological science research are needed to address these important questions about digital life.



43ページの報告書
(p.30-43がreferences)

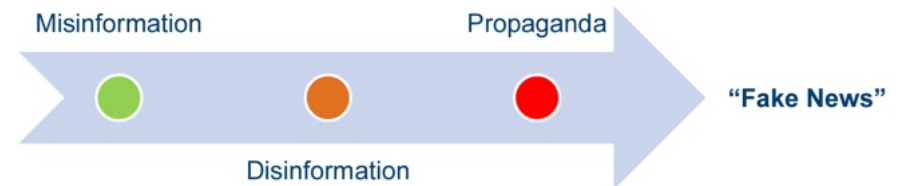
誤情報・偽情報



Wardle, C., & Derakhshan, H. (2017). Information disorder: Toward an interdisciplinary framework for research and policymaking (Vol. 27, pp. 1-107). Council of Europe.

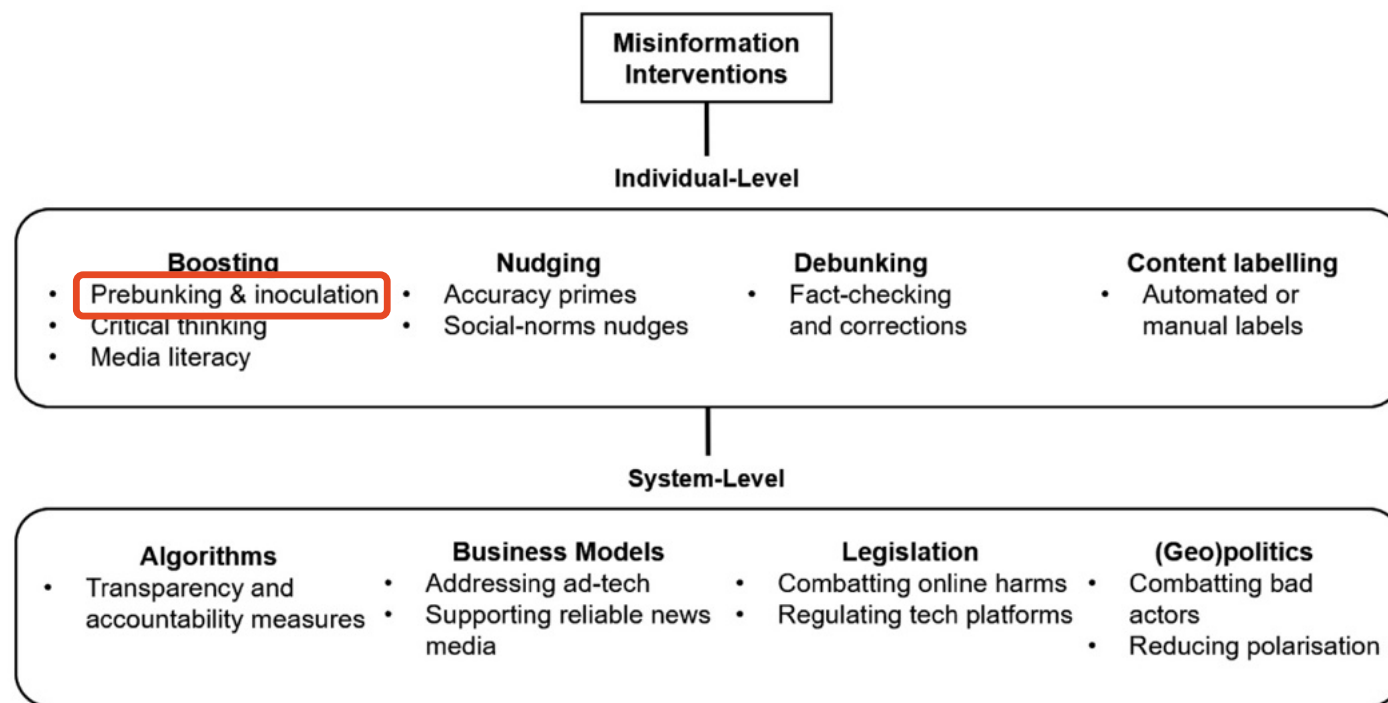
What is “fake news”? (van der Linden, Roozenbeek, Oosterwoud, Compton, & Lewandowsky, 2017)

- **Misinformation**
 - “False or incorrect information” (including human error).
- **Disinformation** (misinformation + intent)
 - “The purposeful spread of false or incorrect information with the explicit intent to cause harm or to confuse and deceive others”.
- **Political Propaganda** (disinformation + political agenda)
 - “Institutionalized or state-run public indoctrination campaigns”.



誤情報に対する介入のレベル

“Prebunking is not a one-size-fits-all solution to ending misinformation”



Roozenbeek, J., Culloty, E., & Suiter, J. (2023). Countering misinformation: Evidence, Knowledge Gaps, and Implications of Current Interventions. *European Psychologist*, 28(3), 189-205. <https://doi.org/10.1027/1016-9040/a000492>
www.oecd-forum.org/posts/prebunking-staying-ahead-of-the-curve-on-misinformation

プレバンキング

Harjani, T., Roozenbeek, J., Biddlestone, M., van der Linden, S., Stuart, A., Iwahara, M., Piri, B., Xu, R., Goldberg, B., & Graham, M. (2022). A Practical Guide to Prebunking Misinformation.

• 事前に誤情報に対して耐性を築くための方法

• 接種理論 (inoculation theory)

- 1960年代に社会心理学者William McGuireによって提唱された理論
- 医療用ワクチンが将来の感染に対して生理的な抵抗力を与えるように、心理的な予防接種も、将来の心理操作に対する抵抗力を与えるという考え方にもとづく
- 心理的予防接種の介入によって、誤情報やプロパガンダによる影響を軽減する実証研究が蓄積されている



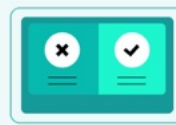
1. Forewarning

A warning activates the viewer's mental defenses against unwanted attempts to persuade them by alerting them that they are likely to encounter misleading messages in the near future.

1. 警告

近い将来、誤情報に出くわす可能性があることを警告する。

受け手を説得しようとする本意な試みに対する受け手の精神的防御を活性化させる



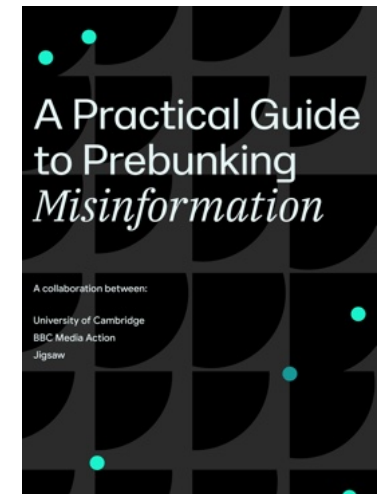
2. Preemptive refutation

An effective rebuttal provides the viewer with tools to counter misleading information they may see in the future. In addition to equipping them with counter-arguments in advance, it helps to include a micro-dose or weakened example of the misinformation so that they can more easily recognize it in the future.

2. 先制的反論

将来みるかもしれない誤情報に対抗するためのツールを提供

あらかじめ反論の材料を与える。
「微量」の例を与えることで、将来それを認識しやすくする。



行動心理学に関する予備知識がなくてもプレバンキングを実践できるよう、学術的研究を実践的なハウツーガイドとしてまとめたもの

ケンブリッジ大学、Jigsaw (Google)、BBCの共同研究

「能動的」プレバンキング

能動的な接種

- ゲームまたはクイズの形で提供される
- 誤情報でよく使われるテクニックに対する抵抗力を高める効果があることが示されている
- 実証研究のメタレビューの結果、受動的な接種と比べると効果の持続性は高いことが示されている（ブースターが提供されると3ヶ月以上）

所要時間15-20分
 教員・生徒向けの
 解説や教材あり

BAD NEWS
 This was the first-ever prebunking game. It is a choice-based browser game created by DROG and the University of Cambridge in which players take on the role of a fake news producer and learn to identify and mimic six misinformation techniques (e.g. trolling, conspiratorial reasoning, impersonation) over six levels. Since then, several other games with similar premises have been designed. [View game >](#)

HARMONY SQUARE
 Set in a peaceful community known for its pond swan and annual Pineapple Pizza Festival, this game appoints the player as the "Chief Disinformation Officer," tasked with polarizing the people of Harmony Square and using trolling campaigns during political elections. [View game >](#)

GO VIRAL!
 This game is designed to help players recognize and resist common misinformation techniques. In this game, you play the role of a media manipulator and uncover their tactics to learn how to resist them in the future.

政治的なプロパガンダに対応したゲーム
 2019年CISA「The War on
 Pineapple」を元にしたシナリオ

短い時間で
 実施できるよう設計

所要時間：5分

<https://inoculation.science/>から利用可能

COM 誤情報を広めるためによく使われる7テクニック

TECHNIQUE	EXAMPLE
なりすまし Impersonation Spreading information as another person or organization in order to increase the credibility of the statement, even though the person or organization has never made such a claim.	"NASA admitted that climate change occurs naturally as a result of changes in Earth's solar orbit and not anthropogenic factors." EXPLANATION: This example uses NASA as a way to increase the credibility of the statement, even though NASA has never made such a claim.
感情操作 Emotional manipulation Using language that leverages strong emotions to increase the credibility of the statement, even though the person or organization has never made such a claim.	"What this airline did for its passengers will make you tear up — SO heartwarming." EXPLANATION: This example shows how information can be presented to deliberately spark an emotional reaction to promote clicking and sharing and reduce critical evaluation.
二極化 Polarization Exaggerating existing differences between two groups to create a sense of hostility or animosity. This is done by using hostile "othering" language to describe another party as liars.	"People's Party: Don't believe the Worker Party liars. They said they would abolish student debt yet more people today are in debt than ever." EXPLANATION: This example uses hostile "othering" language by describing another party as liars.
陰謀論的な考え方 Conspiratorial ideation Explaining events from traditional news using alternative explanations that give weight to the ideas that a small set of powerful people are secretly controlling the world.	"Vaccines are just a way for billionaires to track us with their microchip vaccines! Who's really in control of our bodies here?" EXPLANATION: This example encourages conspiratorial ideation by claiming people are not in control, referring to a mysterious group who is, in this case billionaires, and making unsubstantiated claims.
個人攻撃 Ad hominem attack Ad hominem, Latin for "to the person," target the individual making an argument to take attention away from the argument itself.	"Barbara has an uncontrollable temper and apparently a personality disorder too! We can't have someone crazy in power." EXPLANATION: This example attacks characteristics of the leader, instead of discussing their policies or leadership decisions.
偽の二分法 False dichotomy This is a type of logical fallacy that makes it appear as if there are only two sides or options when in reality there are many more.	"Either you support the energy protests or you don't believe in justice." EXPLANATION: This example positions two ideas as opposite sides of a spectrum — making "supporting energy protests" and "believing in justice" as opposites — when it is possible to support both or neither at the same time, as well as many other positions someone may take.
偽のバランス False balance Presenting a debate as having two relatively balanced viewpoints that are equally valid, even though one side is clearly more supported by evidence.	"Experts debate the shape of the earth. While scientist Reece Chow has found the earth is spherical, expert Rene Paul argues that the earth is flat." EXPLANATION: In this example, despite consensus amongst scientists that the earth is round, the placement of an "expert" that supports a flat-earth theory gives the argument more apparent support than it really has.

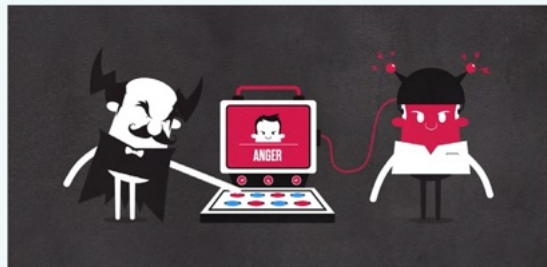
「受動的」プレバンキング

• 受動的な接種

- テクニックに抵抗するための情報が短い形式（テキスト、グラフィックス、ビデオ）で提供される
- 制作・実施が比較的容易（例：SNSのポップアップでテキストメッセージを提示、Youtubeで広告のような形式で流す）
- 没入感が少なく、対話がすくないため影響力が小さい可能性がある

30-90秒

EXAMPLES



VIDEO EXAMPLE: FALSE DICHOTOMIES

This video example — produced by Jigsaw and Cambridge University — uses culturally relevant examples to help viewers understand and recognize the use of false dichotomies in the spread of misinformation. [View video >](#)

誤情報の共有意図を軽減

<https://inoculation.science/>から視聴可能



INFOGRAPHIC EXAMPLE: COVID-19 CONSPIRACY THEORIES

This UNESCO infographic explains conspiracy theories by using COVID-19 as an example.²²

Limitations

Scalability: 実践者は、異なる種類の誤情報・受け手・プラットフォームで行う場合はパイロットスタディが必要

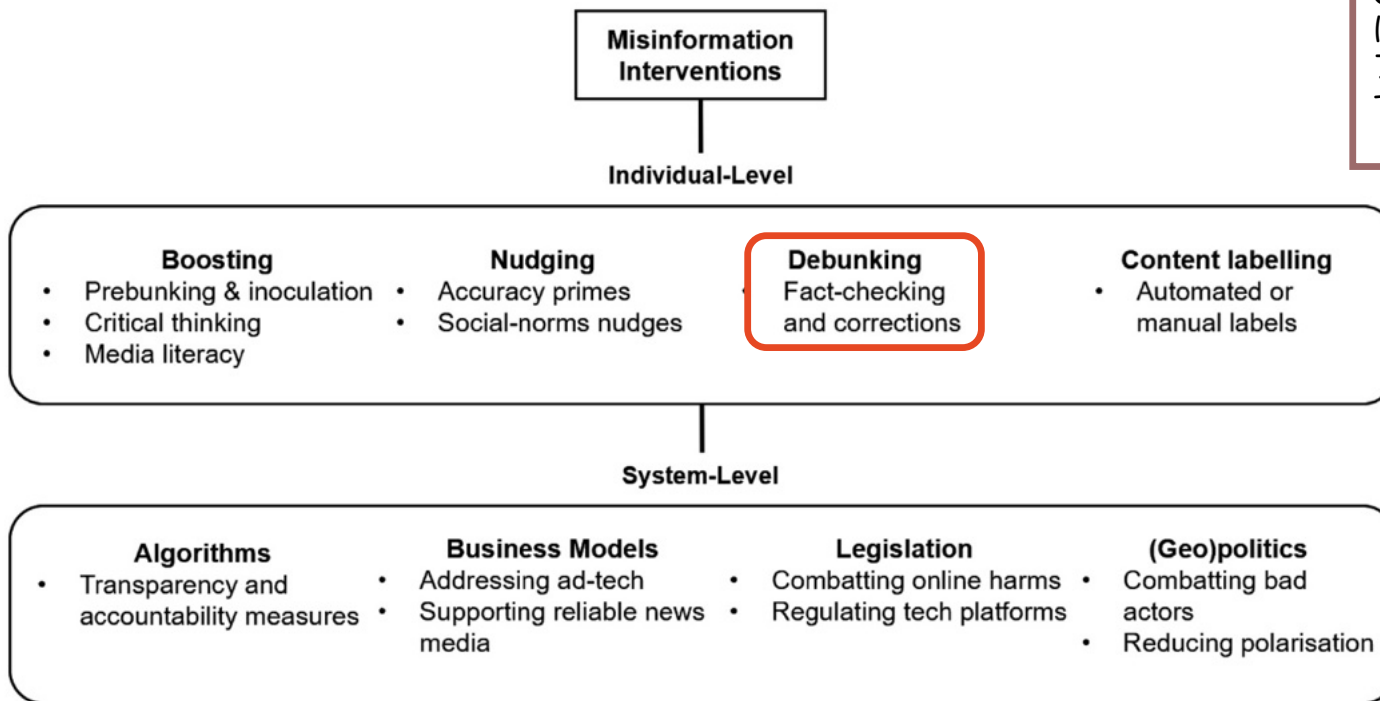
効果は時間とともに薄れる傾向があり、誤情報に対する耐性を維持するためには、定期的な「ブースター」が必要であり、メディアやデジタルリテラシーのトレーニングも必要

効果検証は主に北アメリカや西ヨーロッパ諸国で実施、異文化間での検証が不足。対象者を考慮して設計する必要がある

Youtubeでのフィールド調査（Google Jigsaw）では、動画ベースの予防接種介入は、情報操作テクニックに対する認識を向上させたものの、他のフィールド調査が不足している。

誤情報に対する介入のレベル

“Prebunking is not a one-size-fits-all solution to ending misinformation”



デバンク（ファクトチェック・訂正）

誤情報を事後的に修正する介入方法。なぜその情報が正しくないのかを説明したり、正確な情報を提供することも含まれる。

CDCなどが健康情報（例：COVID-19）などに関してWebサイトやソーシャルメディアでファクトチェックを積極的に行うようになってきている。



Bust Myths and Learn the Facts about COVID-19 Vaccines

Updated Sept. 27, 2023 Español Print

Getting a COVID-19 vaccine is a safer and more dependable way to build immunity to COVID-19 than getting sick with COVID-19.

FACT: COVID-19 vaccination causes a more predictable immune response than an infection with the virus that causes COVID-19.

COVID-19 can cause severe illness or death. You can also continue to have long-term health issues after COVID-19 infection. Getting sick with COVID-19 offers protection from future illness. This protection is sometimes called “natural immunity”. The level of protection people get from a COVID-19 infection may vary depending on how mild or severe their illness was, the time since their infection, and their age.

Getting a COVID-19 vaccine can provide added protection for people who already had COVID-19.

Learn about why you should get vaccinated even if you already had COVID-19.



Roozenbeek, J., Culloty, E., & Suiter, J. (2023). Countering misinformation: Evidence, Knowledge Gaps, and Implications of Current Interventions. *European Psychologist*, 28(3), 189-205. <https://doi.org/10.1027/1016-9040/a000492>
www.oecd-forum.org/posts/prebunking-staying-ahead-of-the-curve-on-misinformation

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/facts.html>

The Debunking Handbook 2020

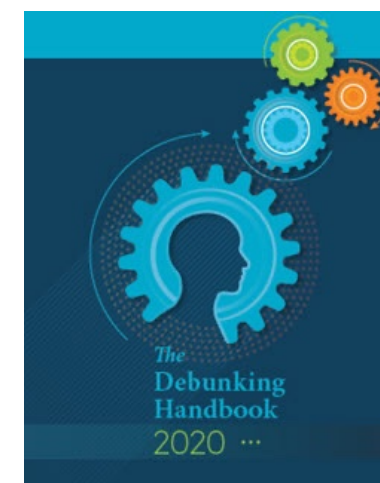
- 誤情報対策として、学術的知見をもとにした実践的提言

- 対象：市民、政策立案者、ジャーナリスト、その他実務家など
- 方法：
 - 2015年以降に誤情報に関する心理学分野における学術的実績のある研究者22名を選定
 - 心理的特徴と対策案の根拠となるエビデンスを集める
 - それぞれに対し、「エビデンスの強度」と「デバンクにおける重要性」を評定し、評定結果を分析
 - 最終的に、「心理的特徴」17点、「実行可能な対策」10点を選定

誤情報に関する心理的特徴、それらにもとづく訂正の効果をあげるための留意点が整理されている

19ヶ国語（ドイツ、イタリア、トルコ、ロシア、チェコ、ポルトガルなど）に翻訳（日本語訳はなし）

Lewandowsky, S., Cook, J., Ecker, U. K. H., Albarracín, D., Amazeen, M. A., Kendeou, P., Lombardi, D., Newman, E. J., Pennycook, G., Porter, E. Rand, D. G., Rapp, D. N., Reifler, J., Roozenbeek, J., Schmid, P., Seifert, C. M., Sinatra, G. M., Swire-Thompson, B., van der Linden, S., Vraga, E. K., Wood, T. J., Zaragoza, M. S. (2020). The Debunking Handbook 2020. Available at <https://sks.to/db2020>. DOI:10.17910/b7.1182



Quick guide to responding to misinformation



Misinformation can do damage

Misinformation is false information that is spread either by mistake or with intent to mislead. When there is intent to mislead, it is called disinformation. Misinformation has the potential to cause substantial harm to individuals and society. It is therefore important to protect people against being misinformed, either by making them resilient against misinformation before it is encountered or by debunking it after people have been exposed.



Misinformation can be sticky!

Fact-checking can reduce people's beliefs in false information. However, misinformation often continues to be believed—this is because correction—this seems effective—people's beliefs—people answering questions to use the most effective approach. **誤情報は粘着する**
ファクトチェックは人々の誤情報への信念を減少させる。ただし、訂正を受け入れた後でも、誤情報はしばしば人々の考えに影響を与え続けることがあり、これは「誤情報持続効果」として知られている。事実による訂正が効果的であるように見えても、人々はしばしば他の文脈で誤情報を利用し続ける。したがって、最大の影響を得るためには、最も効果的な訂正のアプローチを使用することが重要。



Prevent misinformation from sticking if you can

Because misinformation is sticky, it's best preempted. This can be achieved by explaining misleading or manipulative argumentation strategies to people—a technique known as “inoculation” that makes people resilient to subsequent manipulation attempts. A potential drawback of inoculation is that it requires advance knowledge of misinformation techniques and is best administered before people are exposed to the misinformation.



Debunk often and properly

If you cannot preempt, you must debunk. For debunking to be effective, it is important to provide detailed refutations^{2,3}. Provide a clear explanation of (1) why it is now clear that the information is false, and (2) what is true instead. When those detailed refutations are provided, misinformation can be “unstuck.” Without detailed refutations, the misinformation may continue to stick around despite correction attempts.

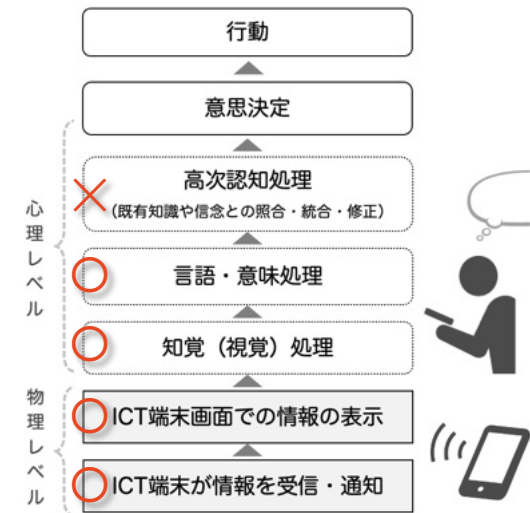
Lewandowsky, S., Cook, J., Ecker, U. K. H., Albarracín, D., Amazeen, M. A., Kendeou, P., Lombardi, D., Newman, E. J., Pennycook, G., Porter, E., Rand, D. G., Rapp, D. N., Reifler, J., Roozenbeek, J., Schmid, P., Seifert, C. M., Sinatra, G. M., Swire-Thompson, B., van der Linden, S., Vraga, E. K., Wood, T. J., Zaragoza, M. S. (2020). The Debunking Handbook 2020. Available at <https://sks.to/db2020>. DOI:10.17910/b7.1182

田中優子・犬塚美輪・藤本和則（2022）誤情報持続効果をもたらす心理プロセスの理解と今後の展望：誤情報の制御に向けて． 認知科学, 29(3), 509-527. doi.org/10.11225/cs.2022.003

誤情報持続効果

(continued influence effect of misinformation)

- 誤りであると指摘されていることを知った後も、誤情報を信じ続けたり、誤情報の影響を受け続ける心理現象
- 訂正情報に視覚的注意を払っていても、訂正情報の内容を記憶（記銘）していても生じる。
- 高次認知処理レベルの観点から研究が進められている。



真実錯覚効果 (illusory truth effect)

Ecker, U. K. H., Lewandowsky, S., Swire, B., & Chang, D. (2011). Correcting false information in memory: Manipulating the strength of misinformation encoding and its retraction. *Psychonomic Bulletin and Review*, 18(3), 570-578.

- 繰り返し同じ情報に接触することで、その情報が正しく感じれるようになること。

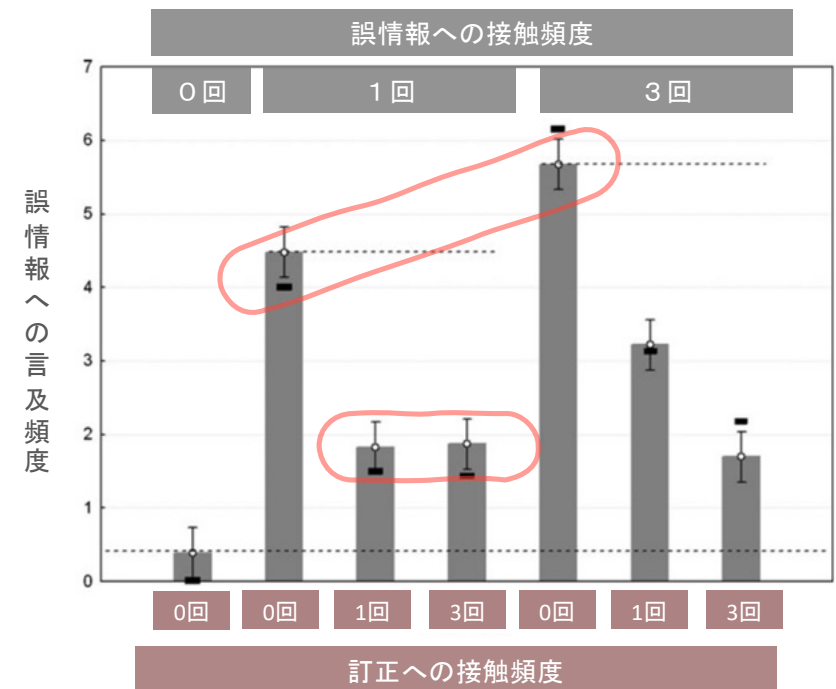
- 情報への「親近性 (familiarity)」や「処理の流暢性 (fluency)」が「正しさ」のシグナルとして利用されるヒューリスティック

「訂正情報」も繰り返し流せばいいのでは？

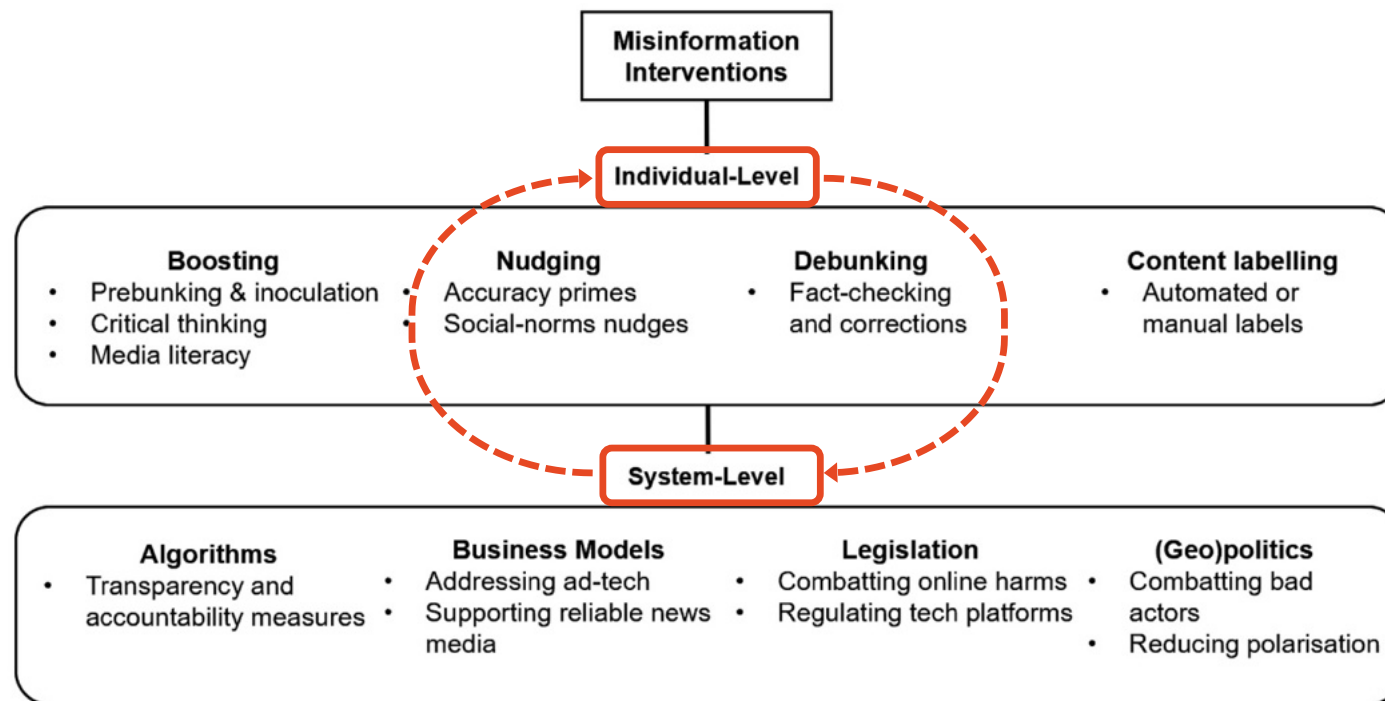
誤情報の3倍の頻度で訂正情報を出しても、誤情報の影響は消えない
(誤情報に触れなかった状態には戻らない)

真実錯覚効果の非対称性

「誤情報の信じられやすさ」と「一度受け入れられた誤情報の影響を事後的に緩和することの難しさ」のギャップ



個人レベルとシステムレベルの相互作用



Roozenbeek, J., Culloty, E., & Suiter, J. (2023). Countering misinformation: Evidence, Knowledge Gaps, and Implications of Current Interventions. *European Psychologist*, 28(3), 189-205. <https://doi.org/10.1027/1016-9040/a000492>

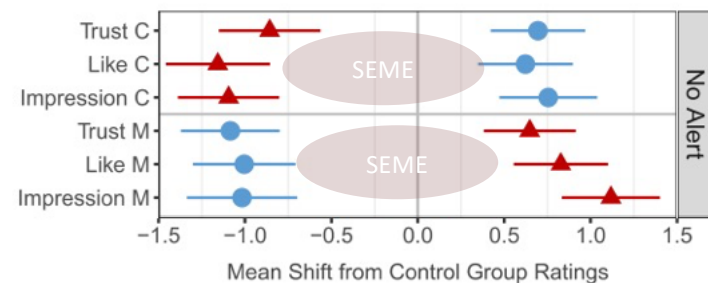
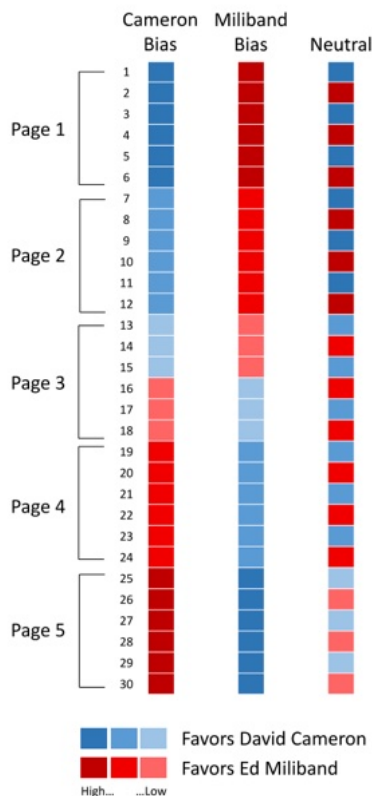
www.oecd-forum.org/posts/prebunking-staying-ahead-of-the-curve-on-misinformation

Human-Computer Interaction

Robert Epstein, Ronald E. Robertson, David Lazer, and Christo Wilson. 2017. Suppressing the Search Engine Manipulation Effect (SEME). Proc. ACM Hum.-Comput. Interact. 1, CSCW, Article 42 (November 2017)

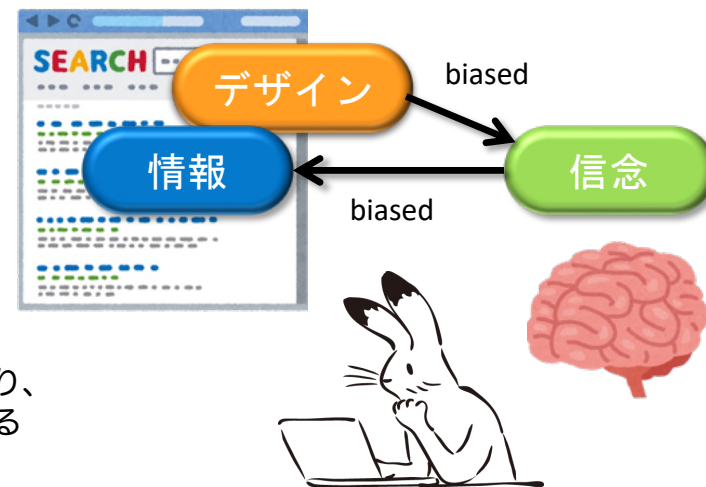
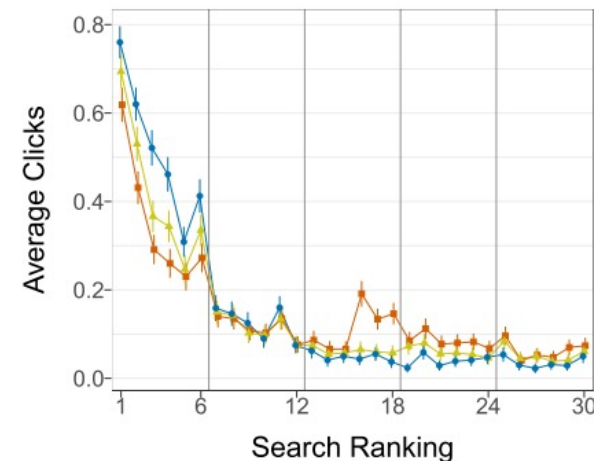
- SEME (search engine manipulation effect)

2015イギリス総選挙前に実施
(保守党キャメロン vs. 労働党ミリバンド)



(a) Shifts in candidate ratings on 10-point Likert scales by group and experiment. Horizontal lines separate ratings for Cameron (C) and for Miliband (M)

キャメロン偏向条件では、キャメロンへの信頼や好感度が上がり、ミリバンド偏向条件では、ミリバンドへの信頼や好感度が上がる



Search rankings by bias group assignment.

Conference Proceedings Upcoming Events Authors Affiliations Award Winners

es > CHI > Proceedings > CHI '23 > Who Does Not Benefit from Fact-checking Websites?: A Psychological Characteristic Predicts the Selective Avoidance of Clicking Uncongenial Facts

RESEARCH-ARTICLE OPEN ACCESS

Who Does Not Benefit from Fact-checking Websites?: A Psychological Characteristic Predicts the Selective Avoidance of Clicking Uncongenial Facts

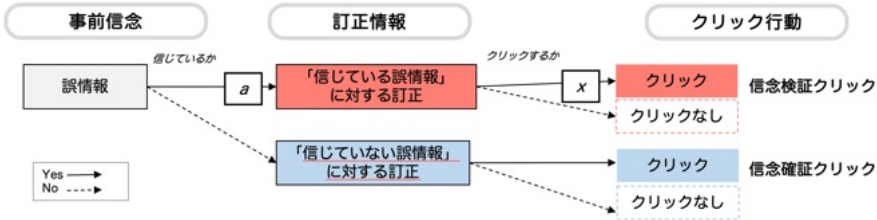
Authors: Yuko Tanaka, Miwa Inuzuka, Hiromi Arai, Yoichi Takahashi, Minao Kukita, Kentaro Inui [Authors Info & Claims](#)

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訂正情報へのアクセスの仕方には個人差がある

回避傾向群：誤情報を信じている場合、訂正のクリックは7%

ネット上に訂正を出す ≠ 訂正を届ける

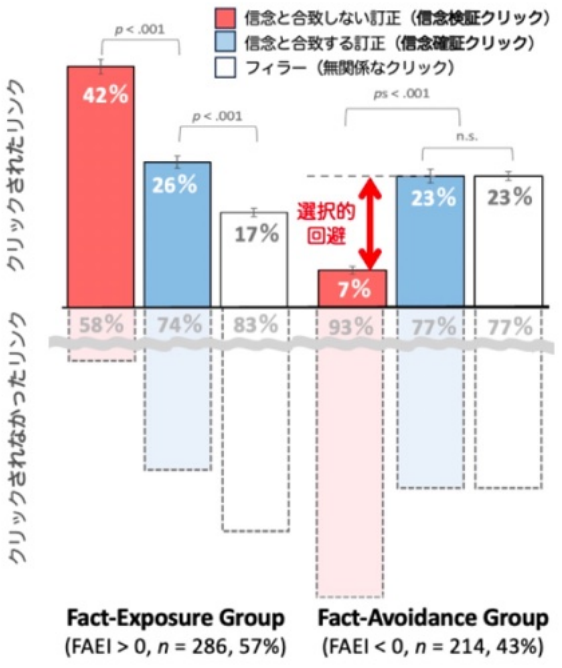


a	正しいと信じている誤情報の数
b	クリック総数
n	表示されているリンク総数 (bの最大値)
x	正しいと信じている誤情報 (a) のうちクリックされた数
EV	ランダムにb回クリックした場合、偶然含まれる事前信念と合致しないファクトリンクの数の期待値

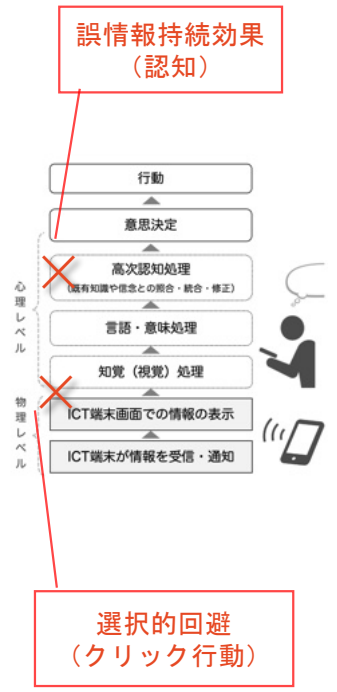
Fact Avoidance/Exposure Index (FAEI)

$$FAEI = x - EV$$

$$EV = \sum_{i=0}^k \frac{{}_a C_i \times (n-a) C_{(b-i)}}{{}_n C_b} \times i$$



*FAEI (Fact Avoidance/Exposure Index) 複数のパラメータ (クリック総数、リンク総数など) をもとにターゲットクリック数 (ここでは信念検証クリック) の期待値を算出する。実際のターゲットクリック数が期待値より高ければ正の値 (FAEI>0)、低ければ負の値 (FAEI<0) を返す。



Yuko Tanaka, Miwa Inuzuka, Hiromi Arai, Yoichi Takahashi, Minao Kukita, and Kentaro Inui. 2023. Who Does Not Benefit from Fact-checking Websites? A Psychological Characteristic Predicts the Selective Avoidance of Clicking Uncongenial Facts. In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23). Association for Computing Machinery, New York, NY, USA, Article 664, 1–17.

まとめ

- 誤情報に関わる心理的要因に関する研究は、これまでの心理学研究の蓄積を土台として、急速に発展している。
- 誤情報への介入方法は個人レベルとシステムレベルに分けて考えられる
- 個人レベルの介入方法は複数ある
 - それぞれ異なる心理的要因を対象とし、背後にある理論や目的、実施方法異なる。
 - 研究の蓄積により（未解明な部分は残るものの）、それぞれの介入方法の効果検証や特徴（限界）が急速に整理されつつある
 - **not a one-size-fits-all solution to ending misinformation**
 - 介入の特徴や目的に応じて、どのように実践に組み込むかを検討する必要がある
 - 多くの介入実証研究は、北米・西ヨーロッパで実施されている。それらの手法・結果を日本の環境にどの程度一般化・導入・応用できるかは要検討
- 誤情報の拡散もその訂正もシステムレベルの要因が介在する
 - 個人レベルとシステムレベルの相互作用については今後の研究が必要