When evidence changes: Communicating uncertainty protects against a loss of trust

Statistics Communication and (in)numeracy reading group

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How does the communication of scientific uncertainty affect people's trust in the communicator and/or the producer of the information?

Having provided information that turned out to be inaccurate reduces trust.

Can uncertainty communication be a buffer against potential lost of trust?

Side note: round estimates are sometimes better even if they are worse

- Participants were told a meal contained 400 or 417 calories
- Later it was revealed the meal was 570 calories.
- Those who got the round estimate gave higher ratings of trust and accurateness of the source.

Can providing an explanation for uncertainty buffer against a potential lost of trust?

Pre-registered hypotheses

- H1: In light of new opposing evidence, the public health authority will be perceived less trustworthy.
- H2: The decrease in trustworthiness (H1) will be smaller if the public health authority has communicated uncertainty before (“buffering effect”).
- H3: The buffering effect of communicating uncertainty will be larger if the public health authority not only communicates but also provides a reason for the uncertainty.

Vignette study in context of fictious COVID vaccine CraVAX

“So far, 56 suspected cases of heart muscle inflammation have been reported after the CraVAX vaccination. In six cases, the heart muscle inflammation ended fatally. However, this does not mean that the vaccination caused the heart muscle inflammation. The health authority states:…”

Four conditions (n=800, 199-201 per condition)

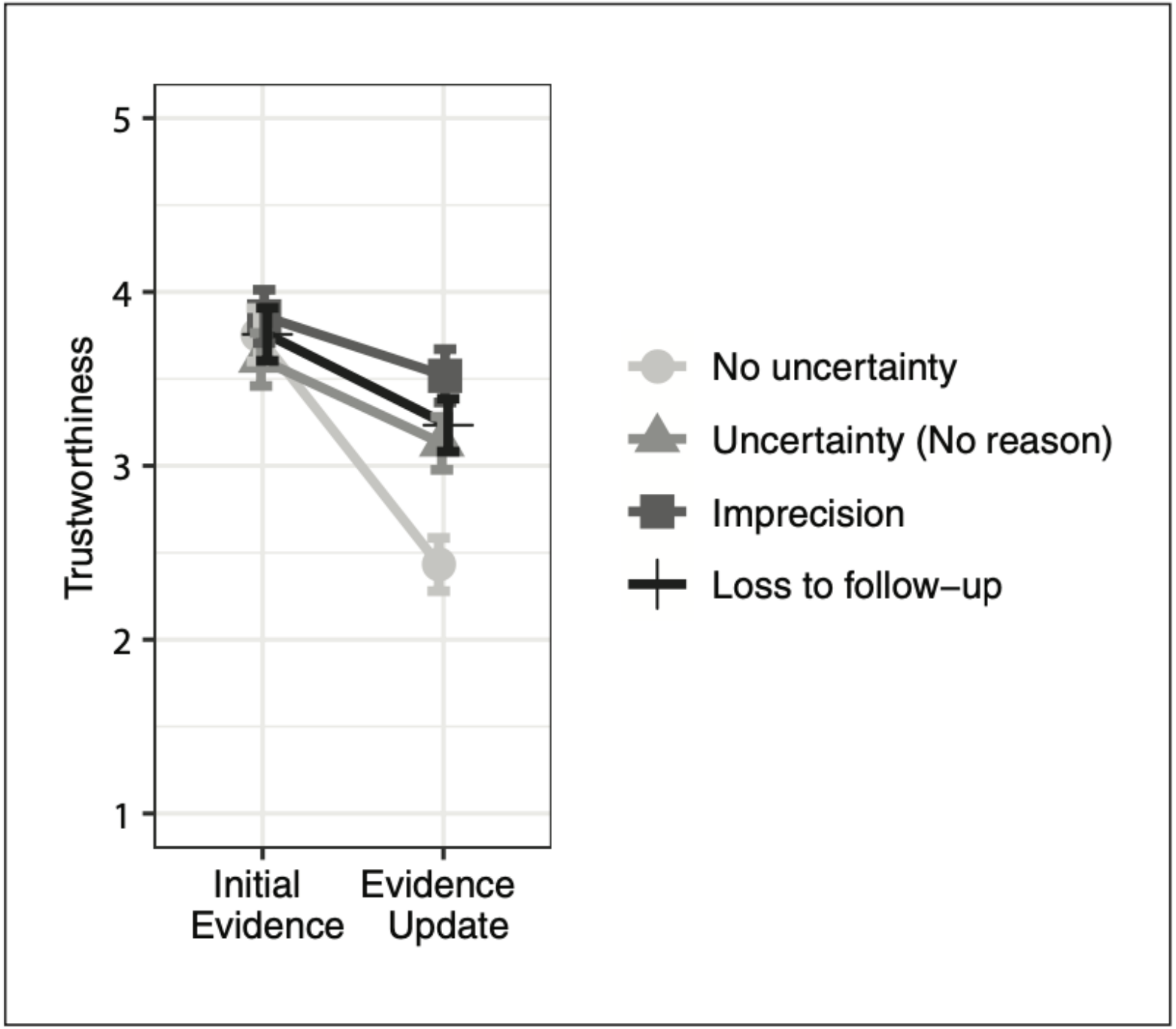
1. No uncertainty,
2. Uncertainty without a reason,
3. Uncertainty due to imprecision,
4. Uncertainty due to loss-of-follow-up.

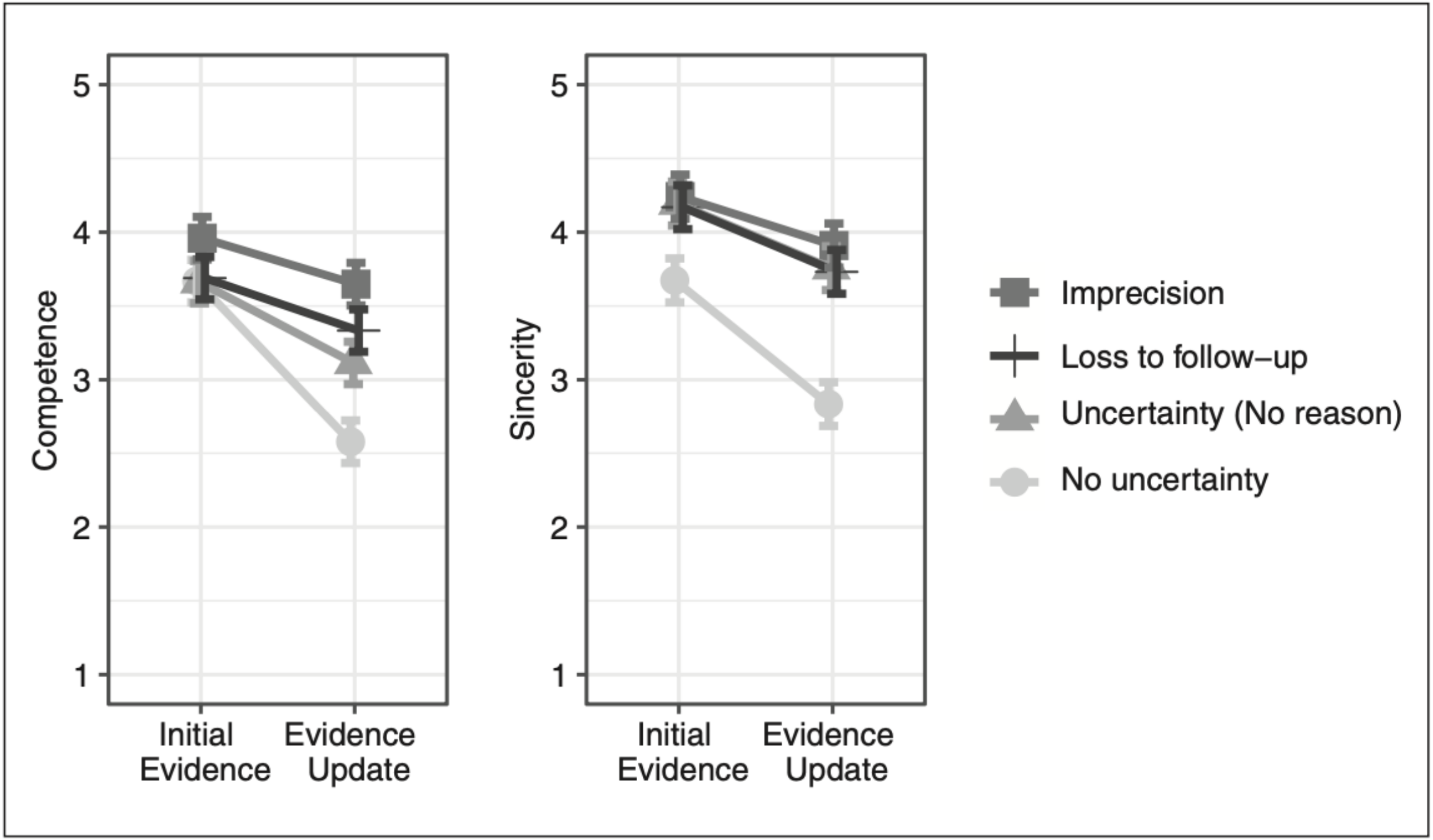
Evidence update

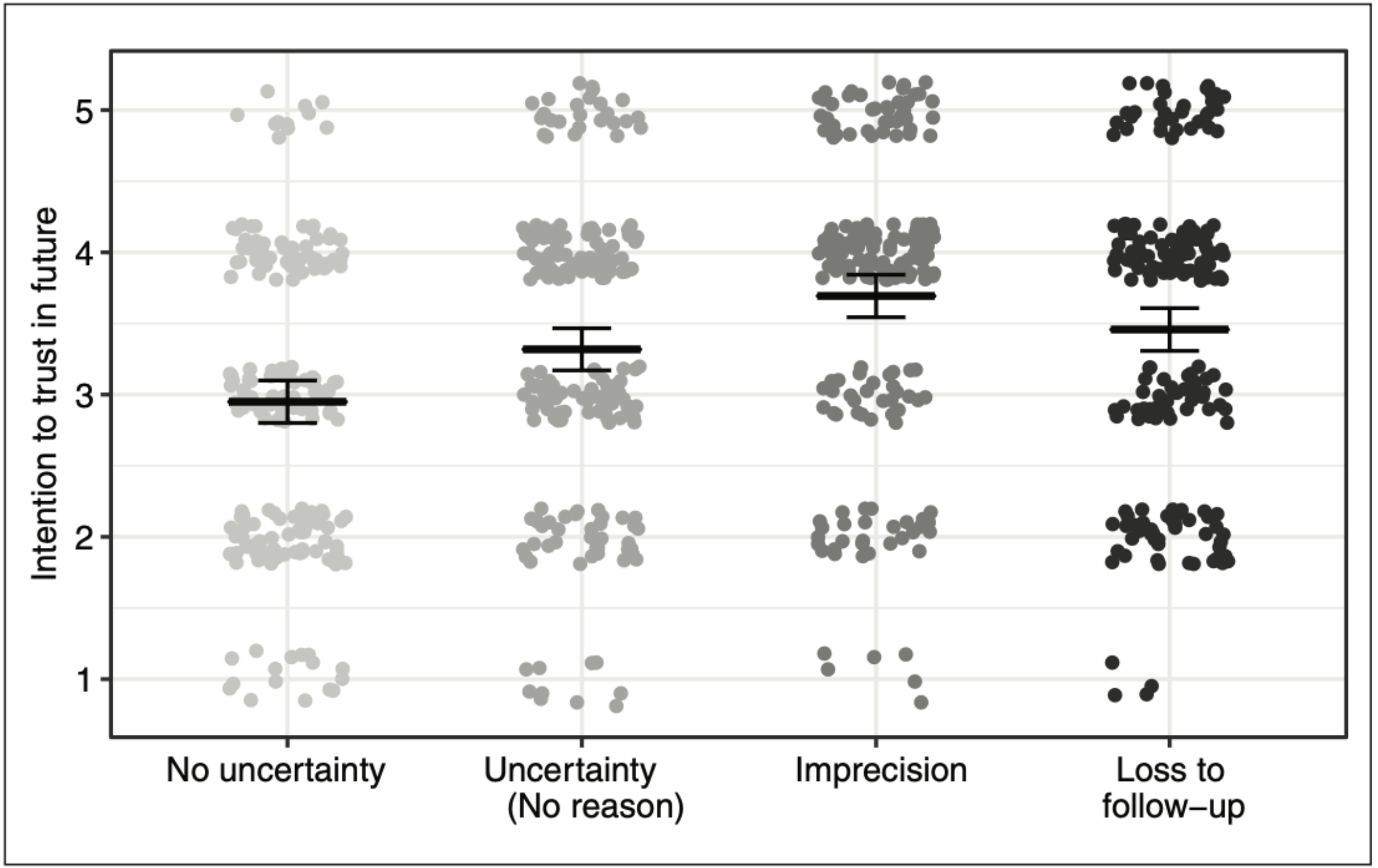
“The government has withdrawn approval for the CraVAX vaccine and the vaccine is no longer available. New data show that vaccination with CraVAX is associated with a significantly increased risk of heart muscle inflammation. Heart muscle inflammation occurs in 11 out of 100,000 people who receive the CraVAX vaccine. For comparison: Without the CraVAX vaccination, heart muscle inflammation would be expected in 5 out of 100,000 people.” "

Measures (all five-point Likert except the last two)

- Trustworthiness
- Competence and sincerity
- Intention to trust in future
- Reasons for trustworthiness ratings
- Individual difference measures.


Trustworthiness
5
4
3
2
1
Initial Evidence
Evidence Update
No uncertainty
Uncertainty (No reason)
Imprecision
Loss to follow–up


Competence
Sincerity
5
4
3
2
1
Initial Evidence
Evidence Update
Imprecision
Loss to follow–up
Uncertainty (No reason)
No uncertainty


Intention to trust in future
5
4
3
2
1
No uncertainty
Uncertainty
(No reason)
Imprecision
Loss to
follow–up

Reasons for (dis)trust

- 428 participants gave reasons for trusting the health authority, most common: “they admit uncertainty” (n =253),
- 271 participants gave reasons for **dis**trusting the health authority, most common: “the result contains uncertainties”(n=95).

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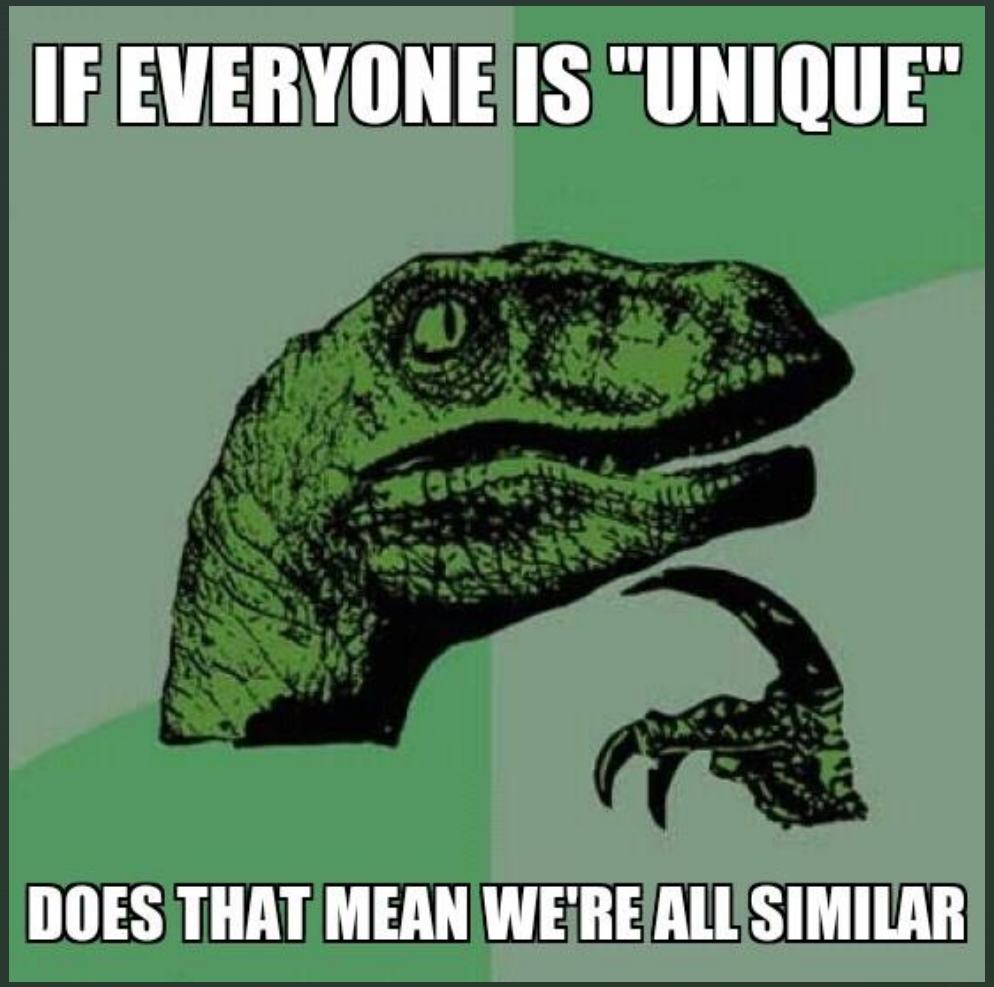
Individual differences



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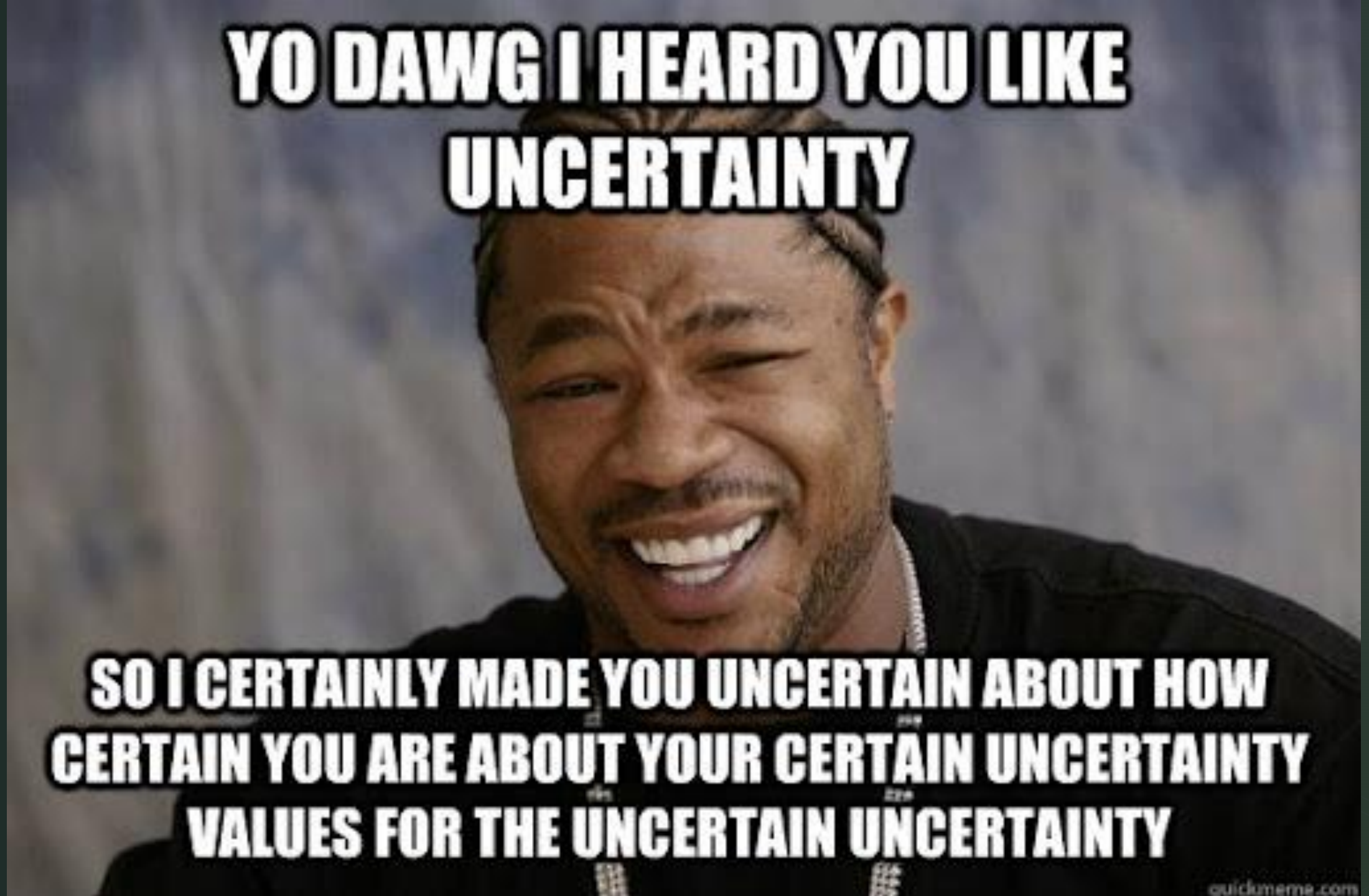
Discussion

- How to deal with the fact that some participants reacted negatively towards uncertainty being communicated?
- In real world updating evidence takes much longer and people will not be reminded about the original message. What would this change?
- Would different explanations have other effects?
- Would negatively directed uncertainty lead to different effects? Or other ways of expressing uncertainty?
- What if the evidence is better than expected?


YO DAWG I HEARD YOU LIKE UNCERTAINTY
SO I CERTAINLY MADE YOU UNCERTAIN ABOUT HOW CERTAIN YOU ARE ABOUT YOUR CERTAIN UNCERTAINTY VALUES FOR THE UNCERTAIN UNCERTAINTY
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