

Supplementary Material

Uncivil communication and epistemic trustworthiness concerns in public online discussions in response to scientists during the Covid-19 pandemic

Supplemental A: Codebook of the Content Analysis

I Formal Categories

V0 Coder (V0_coder)

1 = Coder 1

2 = Coder 2

V1 Tweet ID (V1_tweetid)

The ID of the tweet is to be taken from the data mask and transferred.

V2 Original TweetID (V2_origtweetid)

The ID of the tweet is to be taken from the data mask and transferred.

V3 Date (V3_date)

The date of the tweet is to be taken from the data mask and transferred.

V4 Text (V4_tweettext)

The text of the reply tweet is to be taken from the data mask and transferred.

V5 Original Tweet Text (V5_textoriginal)

The text of the original tweet is to be taken from the data mask and transferred.

V6 Original User Screenname (V6_originalscreenname)

The original user name of the tweet is to be taken from the data mask and transferred.

V7 Time Frame (V7_timeframe)

1 = 16.03.2020 – 28.03.2020

2 = 28.10.2020 – 10.11.2020

3 = 16.12.2020 – 03.01.2021

4 = 03.03.2021 – 16.03.2021

V8 Scientists Gender (V8_addressgender)

1 = male

2 = female

II Content Categories Replies

V9 Personal/impersonal/not personal / (V9_personal)

The way in which the tweet is formulated is direct or with personal addressing (“you“ / “you“ (ger. honorific pronoun: Sie) / “Thank you, Mr. XX“) or indirect/impersonal („the scientist“ / “the science must“ / „Mr. XX must“) or not formulated personally. Here, it is irrelevant whether the personal formulation addresses scientists or other actors.

0 = impersonal/not personal

1 = personal

Examples [own translations]

Personal

@*scientist* Uncontrolled spaces? Do **you** mean the classrooms where distancing is not possible? Or the changing rooms in schools and daycare centers? It cannot apply at home because there are rules. (V9 = 1)

Not personal/impersonal

@*scientist* Theory and practice are sometimes 2 different things. There, I can partly understand skepticism. **But why not act despite practice? Switzerland** knew what would happen in the fall with a look at Israel. And now towards the UK. And still no action is being taken. (V9 = 0)

@*scientist* The worst thing about Corona is that everything always comes with an announcement, I don't know what people are thinking? **Experts point out that** it is simply not being implemented. Sitting it out until it is no longer possible. Terrible. But **the smart ones have to carry on**, even more vehemently!! (V9 = 0)

V10 Incivility (V10_incivility)

Does the tweet contain some form of incivility? (See forms V12_1 – V12_7, only take the shorter route first after some practice and trial coding) (*operationalization derived from Papacharissi (2004)*)

0 = no

1 = yes

V11 Trustworthiness Concerns (V11_trustworthiness-concerns)

Is the trustworthiness being questioned in the tweet (denied, doubted, attacked)? This is expressed by denying, doubting or attacking expertise, integrity or benevolence. Only one has to be addressed to be coded.

Dimensions derived from the Muenster Epistemic Trustworthiness Inventory (METI) (Hendriks et al., 2015)

Does the user question the **expertise** of the scientist(s)? This can be expressed through the attribution of incompetence, lack of intelligence, lack of training, unprofessionalism, inexperience (indicators are words such as: stupid, no idea, low-level, dumb).

Does the user question the **integrity** of the scientist(s)? This can be expressed through the attribution of insincere, dishonest, unjust, egoistic or unfair actions. This also includes, for example, the accusation of political and economic influence.

Does the user question the **benevolence** of the scientist(s)? This can be expressed through the attribution of immoral, unethical, irresponsible or reckless actions. This can include, for instance, the accusation of “acting unscientific”, provided that this does not refer to political or economic influence. The focus is also on the denial of moral behavior, meaning that the scientist does not act according to values and rules that are recognized in society.

0 = no

1 = yes

If V10 and V11 = 0, end the coding process for the case.

V12 Forms of Incivility

Note: Hashtags are treated as normal words and coded accordingly if they contain, for example, vulgar language, insults or similar.

V12_1 Emotionality (V12_1_emotionality)

Does the user formulate the tweet or a sentence or clause (then at least three words) of a tweet in capital letters or with three or more question marks or exclamation marks that indicate screaming **and** have a negative connotation? Single words in capital letters are insufficient.

0 = no

1 = yes

Examples [own translations]

Emotionality

@scientist Coming back to the so-called seriousness of the Corona pandemic, Prof. Sucharit Bhakdi says something completely different about Corona, he says a lot of it is pure scaremongering and is irresponsible, Hendrik Streeck also warns against scaremongering!!!! (V12_1 = 1)

@scientist Where are all the deaths you predicted? Immortality!!! Nobody cared about the many deaths in 2017/18, and in 2020 only lies are being spread. You wrote this letter on your own to make yourself look good again, you Dr. Dr. Dr.???

Not sufficient for coding V12_1 = 1, because no negative attack but compliment.

@scientist My late husband was treated by Prof. Hallek's team. Very severe aplastic anemia and resulting in cerebral hemorrhage. This team gave my husband and me at least 3 more years. I will be forever grateful for that!!! Very good doctors, all the way! (V12_1 = 1)

Not sufficient for coding V12_1 = 1, because only two individual words and not whole (partial) sentences.

Insufficient: @scientist We already experienced your scaremongering and lying propaganda in 2009 with the H1N1 pathogen, which has been known since the 1930s! See here (when the federal government's mask hype didn't yet exist due to a lack of them), how **BRAZENLY** you **LIED**: (V12_1 = 0)

No, because one single word, to clarify emphasis.

@scientist We have to live with the virus? is **NOT** a pandemic concept. The only working strategy is #ZeroCOVID. Taiwan, South Korea, New Zealand, Uruguay, Vietnam etc. have shown the way. (V12_1 = 0)

No, because of positive connotation.

@scientist More of that! **MORE OF THAT!** (V12_1 = 0)

V12_2 Vulgar Language, Swearing (V12_2_vulgarity)

Does the user use vulgar language? For example, if a letter within a vulgar expression is replaced by an asterisk in order to avoid automated recognition, the term will still be coded as vulgar. If a pause in thought is included, for example, "...“ and the expression leaves room for interpretation, this is not coded (e.g.: *[in German]* “be... expertise”, can stand for *bescheiden* (not vulg.), *bescheuert* (not vulg.), *beschissen* (vulg.))

0 = no

1 = yes

Examples [own translations]

Vulgar Language

@scientist When criminals lift themselves up into heaven, the people **vomit** at your feet. (V12_2 = 1)

@scientist You and Breivik are two people: Not reading Kant, understanding him and acting big. Kant becomes "**cunt**" with you both and with the best will in the world I have nothing to do with that. You (both) are beyond the possibilities of psychiatry with your narcissism and megalomania. (V12_2 = 1)

@scientist Yes, that's how you get people to cooperate. Please just stay a scientist. But you're probably just **pissed** because you contributed to the failure over the summer. (V12_2 = 1)

V12_3 Sarcasm (V12_3_sarcasm)

Does the user use sarcastic or cynical language? (e.g., by using non-literal language, such as irony, which assumes that the audience understands that the speaker means the opposite. Sarcasm is different from irony, because sarcasm requires an object of criticism (Anderson & Huntington, 2017)). Not all irony is sarcasm, but sarcasm often contains irony. Sarcastic statements also often contain a mocking component. Rhetorical questions are only coded as sarcasm if they are also mocking.

0 = no

1 = yes

Examples [own translations]

Sarcasm

@scientist Whoosh, you are technically experienced?... no normal person understands this artist head?!? Congratulations on your intellect?..." (V12_3 = 1)

@scientist Well, exactly. That is one of the questions. Exactly why all lockdowns remain more or less ineffective. **But your colleagues Drosten, Wieler and the artist head from the Helmholtz Institute will give the government good advice in a few days. Sure....Sure...**" (V12_3 = 1)

V12_4 Name-calling (V12_4_namecalling)

Does the user use insults on a personal level (e.g., puns with names or an insulting word instead of the name)?

Also given nicknames fall under name-calling. An accusation (e.g., your imposture) is not name-calling, but derogatory terms regardless of the group of people (e.g., sleeping sheep, covidiot, swearers, toothless tigers, criminals, talk show professors, etc.) are.

0 = no

1 = yes

Examples [own translations]

Name-calling

@scientist It is already enough if Drosten is written somewhere at the beginning. Then it's clear that it's better to take the Mickey Mouse booklet. **Clown show mit Clausi and Drostinocchio.** (V12_4 = 1)

People who trivialize the virus or refuse to acknowledge it, I would simply ignore. Let them say whatever they want, whatever they do anyway. That's why I wouldn't even talk to **such human waste**. (V12_4 = 1)

And YOU of all people are writing that, you **sick joker**? (V12_4 = 1)

V12_5 Threat (V12_5_threat)

Is the tweet vaguely threatening the reference person or explicitly threatening (violence).

0 = no

1 = yes

Examples [own translations]

(Violent) threat

@scientist The most dangerous mutation is you, **the right test for you is in the works... it will definitely be reliable!** (V12_5 = 1)

@scientist 2009 probably was lucrative for you, now you've struck again. What kind of trash do you have to be, without conscience, to do something like that? What damage has been done. The best and biggest lie will fall at some point, **at some point you will pay for your actions.**? (V12_5 = 1)

@scientist until a year ago, none of you were interested in nursing and retirement homes. I can only shake my head at that. With your testing, for example, on people with dementia.. that is already assault..**but you will be punished for that at some point..** (V12_5 = 1)

V12_6 Silencing (V12_6_silencing)

Does the user use language intended to encourage the reference person to remain silent? This includes statements that imply or deny the reference person's right that the person should not express themselves (publicly).

0 = no

1 = yes

Examples [own translations]

Call for Silence

@scientist Boy, if you come with a different point every tweet and don't respond to what was said: **Fuck off.**" (V12_6 = 1)

@scientist **Go home Drosten!!!!** Tell your dirty fairy tale stories to Santa Claus because now is the right time for that! Stop lying to the German people, to which you obviously do not belong!!! Rat! (V12_6 = 1)

@scientist What this Mr. Gassen is saying is not right. **Such people should no longer be given a platform to express themselves.** (V12_6 = 1)

V12_7 Sexism, Gendering, Stereotypes (V12_7_gendering_stereotypes)

Does the user use stereotypical, sexist or gendering language?

Stereotype assignment: Is the reference person assigned certain **stereotypes** or is he or she associated with **prejudices**? Is the target group being generalized negatively? An insulting attribution alone is not enough (would be the same as name-calling), but an action or characteristic must be included. **It must be indicated that the user assumes that this characteristic applies to the majority of people in this group.** In addition, a **negative** connotation is necessary. Highlighting opposites is insufficient, the assigned characteristic must become clear. Individuals cannot be stereotyped unless they are associated with a group.

Sexism/Gendering: Are gender-specific roles assigned to the reference person or is a sexist statement made?

0 = no

1 = yes

Examples [own translations]

Stereotypes

“You lobbyist representative” ← not sufficient (V12_7 = 0)

„All that comes from these lobbyist representatives is shit“ ← sufficient, (V12_7 = 0)

„Snooty, all-knowing elite societies“ ← sufficient (V12_7 = 1)

@scientist But if your children are indoctrinated with socialist propaganda by **left-wing extremist anti-fans at FFF**, you are quiet.. ok ? ← sufficient (V12_7 = 1).

Sexism/Gendering (see also Southern & Harmer, 2021)

@scientist Slow down now, **young lady!** We're looking for the variant first. As long as we don't find it, it's not in Switzerland yet, that's it. Once we find it, it doesn't mean anything. NOTHING. (V12_7 = 1).

@scientist Who would have thought that women's power would get us through this pandemic?!? **For men, their egos get in the way too much of making a productive contribution to fighting the pandemic.** (V12_7 = 1).

Supplemental B: Intercoder Reliability

Table 1. Krippendorff's Alpha Intercoder Reliability

Variable	Variable description	Krippendorff's alpha
V9	Personal/impersonal	0.74
V10	Incivility	0.72
V11	Trustworthiness concerns	0.75
V12_1	Emotionality	0.79
V12_2	Vulgarity	1.00
V12_3	Sarcasm	0.70
V12_4	Name-Calling	0.75
V12_5	Threat	0.83
V12_6	Silencing	0.71
V12_7	Stereotypes	0.90

Literature

- Anderson, A. A., & Huntington, H. E. (2017). Social media, science, and attack discourse: How Twitter discussions of climate change use sarcasm and incivility. *Science Communication*, 39(5), 598-620. <https://doi.org/10.1177/107554701773511>
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