Article: Misinformation more likely to use non-specific authority references: Twitter analysis of two COVID-19 myths

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Codebook

Each tweet in our dataset received a code of "0" (no) or a code of "1" (yes) for each of the following categories:

1. Irrelevant
2. Misinformation
3. Debunking
    a. Debunking – Expressed Suspicion
    b. Debunking – Overt debunking
4. Authority Appeal
    a. Abstract (non-specific) Authority Appeal
    b. Specific Authority Appeal

The following guidelines were used by the authors to code the individual tweets.

- **Irrelevant:** Irrelevant tweets include terms from the search query but are unrelated to the myth. For example, if a tweet describes general tips about breathing exercises to boost immunity against COVID-19, but are not claiming that the breathing exercises are a self-diagnosis tool, then mark as irrelevant. Questions about the myth are coded as irrelevant for this analysis, as they are not clearly misinformation or debunking.
- **Misinformation:** Messages that state misinformation, urge other people to adopt the misinformation recommendations, or otherwise state the false claim with no attempt at disconfirming or denying the myth. If the message indicates a myth pertaining to "gargling" or "holding breath", code the tweet as misinformation
- **Debunking**: Messages designed to correct or refute the misinformation
- **Debunking – Expressed suspicion:** If the message indicates the person is skeptical of the misinformation, but they do not explicitly correct the myth, then it is coded as "suspicion" but not "overt debunking"
- **Debunking – Overt debunking:** If the message clearly states or indicates that the myth is false in any way, code the tweet as "overt debunking"
- The debunking codes (expressed suspicion and overt debunking) are not mutually exclusive. A single tweet can receive a code indicating that it both expresses suspicion and overtly debunks the myth. In the case that a tweet received a score of both expressed suspicion and overt debunking, we retained the code of overt debunking.
- **Authority Appeals:** If the post mentions or refers to a published article or research study, that is coded as an authority appeal. Both misinformation tweets and debunking tweets may contain authority appeals and should be coded accordingly.
    - If a post says "someone told me", "a friend mentioned", or "people recommended", that is not considered an authority appeal
    - For example, a message that refutes the myth and provides a link to a scientific study, fact-checking article, or news media source is coded as "overt debunking" and as having an "authority appeal".

- **Examples of authority appeals**:
    - Individual:
        - Medical/health background
        - Leadership position
        - Other prestige or assumed knowledge (e.g., a doctor in Wuhan, China, reference to a verified user).
    - Organizations
        - Specific names of authority organizations (e.g., Stanford, WHO, CDC, GMA, Factcheck.org, Snopes, etc.)
- **Guidelines for coding authority appeals as "abstract" ("non-specific") or "specific"**
    - Abstract or non-specific authority appeals include general references to authority, such as "my friend who is an emergency room doctor", "medical experts", or "Taiwanese researchers"
    - References to countries as an informed source or authority (e.g., a friend in Wuhan, China said to gargle every day to keep COVID away) are considered an "abstract" or non-specific authority appeal
    - The mention of a country as an authority appeal is an "abstract authority appeal". For example, "Taiwanese researchers" or "Japanese experts"
    - Links to articles from organizations or media sources debunking the myth are a "specific authority appeal", as they reference specific information and organizations as the source of the information
    - Names of specific people (e.g., Dr. Amy Smith at Stanford) or specific organizations (e.g., CDC, WHO) are coded as a "specific authority appeal"

Note: In the analysis for the study, both types of debunking tweets were collapsed into a single category. Thus, any difficulty experienced by coders in distinguishing between "debunking – expressed suspicion" and "overt debunking" may affect the descriptive statistics for the categories but should not affect the analysis comparing misinformation tweets vs. debunking tweets.

The table on the next page contains examples of each coding category for each of the two myths examined:

COVID-19 Tweet Examples by Category

Category of tweet	COVID-19 myth	
	Gargling	Holding breath
Irrelevant	On a scale from booking my $30 round trip tickets to Milan to gargling bleach, how concerned are you about the Coronavirus?	Do we know if there's any scientific credence to the "hold your breath for 10 seconds" Coronavirus test? I've been doing it just in case but I'd like to know
Misinformation	Gargles with warm water & salt or vinegar and drinking lots of warm water can wash away #Coronavirus when its clinging to the throat in first 4 days after entering the body, So gargle everyday pl spread this info through retweets #CoronaOutbreak	A simple coronavirus test you can do yourself ... Take a deep breath and hold your breath for 10 seconds .. After you have held your breath for 10 seconds and your not coughing, experiencing chest pains, tightness or any discomfort your probably not infected with coronavirus.
Debunking (overt)	WARNING!! FAKE! While gargling some combination of warm water, salt, and vinegar has long been used as a means of relieving symptoms related to colds and flus, such as sore throats, there's No evidence that it can help drive out infections from the COVID-19.	If anyone is saying to hold your breath for 10 seconds as a test for coronavirus... this has been debunked.
Debunking (expressed suspicion)	Meanwhile I saw someone we went to high school with share something that gargling with salt water would kill the coronavirus and it wasn't a joke	Anyone hear about the 10 second test? If you can hold your breath for 10 seconds you don't or possibly don't have the coronavirus. Different theories about this on social media. I'm not buying it personally. I stopped after 15 seconds but it proves nothing imo.
Abstract authority appeal (misinformation)	From a medical friend in the US. Pls share! Coronavirus before it reaches lungs it remains in the throat for 4 days n at this time he/she begins to cough n has throat pains. Drinks a lot of water n gargling with warm water and salt or vinegar eliminates the virus. Share pls.	Taiwan experts provide a simple self-check. Take a deep breath, hold your breath for more than 10 seconds. If you complete it without coughing, without discomfort, stiffness or tightness, etc, it proves there is no Fibrosis in the lungs, basically indicates no infection. #COVID19
Specific authority appeal (debunking)	Sorry, gargling with salt water won't kill off the virus, it's a myth: https://t.co/dIieS6ysWq	You can hold your breath for ten seconds? That's nice — but you might be infected with COVID-19 anyway. Good ol' @snopes says so. https://t.co/MbcuwuBqUG