

COVID-19 Research in Alternative News Media: Evidencing and Counterevidencing Practices

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1. Main categories: (counter)evidencing practices

(Counter)Evidencing Practice	Description	Examples (translated from German)
1 References to Data/Methods	<p>“References to Data/Methods” is coded when the data and methods of the presented study are mentioned. For instance, references can involve details on the study design (e.g., hypotheses, research questions, applied theories, experimental setup) and/or information on test procedures (e.g., procedural structure of the study). Data/Methods can also be referenced by mentioning scientific quality criteria of reported studies, e.g., concerning theoretical questions like the choice and interpretation of theories and/or the methodological approach like the size and composition of the sample, evaluation methods, or statistical characteristics.</p> <p>Note: All references to Data/Methods can somehow be evaluative. Related parameters can be mentioned neutrally or evaluated in a positive (supporting the study), negative (criticizing the study), or ambivalent (both, supporting and criticizing the study) way.</p>	<p>„According to a statistically valid estimation, the vaccine could increase the risk of getting ill tenfold – what is, of course, absurd – or have a protective effect of up to 94.2%. Just choose any figure in between. Or to express it in a more understandable way: the studies of AstraZeneca are waste” (N33).</p> <p>„Probably the best current figures were provided by virologist Hendrik Streeck’s study conducted in the commune of Gangel in the district of Heinsberg, which has been severely affected by the corona epidemic. He determined a COVID-19 mortality rate of 0.37%” (P2).</p> <p>„Corresponding to the newest data, the Russian corona vaccine Sputnik V has a high efficiency of 97.6%, better than previous estimations of 91%” (P29).</p> <p>„Researchers of the medical faculty of the University of Duisburg/Essen (UDE) together with researchers of the University of Münster and the MVZ labor Münster have analyzed about 190.000 results from more than 160.000 people” (N49).</p> <p>„In each group, one study participant got infected with the virus. The effectiveness derivable from these raw data is 0%; just the fact that the vaccine group has been slightly bigger than the control group leads to the propagated effectiveness of 6.3%, which, however, stands opposite to an absurd 95% confidence interval of -1.405% until +94.2%” (N33).</p>
2a References to the source of the claim	<p>“References to the source of the claim” as one part of references to Experts/Authorities is coded when there are references to qualities and features of the claimant/the source of the claim underlying the study (either by article author or cited authorities, etc.). Source of the claim can concern involved researchers, involved organizations, as well as journals/publishers somehow involved in the study. References to the source of the claim can be neutral, positive, negative, or ambivalent in direction and can refer, but are not limited, to the following aspects:</p> <ul style="list-style-type: none"> • (Neutral) mentions of the academic status of an involved researcher (e.g., PhD, Professor, Director, Head of xy), mentions of involved scientific organizations (e.g., specific universities), and/or mentions of journals/publishers of a study • Evaluative attributions of specific features of the claimant/the source of the claim, for instance, regarding its skills, attitudes, actions, or character traits (even those not relevant to research) 	<p>„In Baltimore, at the meanwhile unfortunately institutionally corrupted Johns Hopkins University, ...” (P13).</p> <p>„We indicate a study recently published in the <i>New England Medical Journal</i> that investigates the case of corona “control strategies” under military supervision” (N28).</p> <p>„Autopsies could be enlightening. Especially when it is about a virus, the scientific claim should be to research its effects on the human body as fast as possible and to find out as much as possible. Why does the RKI [German Robert-Koch-Institute] not consider it?” (N10).</p> <p>„... just like, for instance, Professor Hendrik Streeck, head of virology at the University of Bonn and quasi the “state-virologist of NRW [German federal state of North Rhine-Westphalia], since he conducted the most precise study on paths of infection, courses of infection and mortality rate of COVID-19 under the authority of Armin Laschet” (P13).</p> <p>„This operetta-like causality seems to be an expression of political wishful thinking. Christoph Richter has no scientific competence at all regarding medical or even epidemiological questions” (P35).</p>

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<p>2b References to external experts</p>	<p>“References to external experts” as another part of references to Experts/Authorities is coded when different external authorities are mentioned to somehow comment on the presented study and/or related actors, knowledge and claims. External experts can be, but are not limited to:</p> <ul style="list-style-type: none"> • external scientists, scientific organizations, scientific journals/publishers • external representatives of the society (e.g., political, economic, medical, religious actors) • external media organizations or media representatives • appeals to source quantity: arguing for/against a claim because of the number of people that agree/disagree with it or referring to common collective knowledge and experiences <p><u>Note:</u> All references to external experts can somehow be evaluative. Experts can express neutral thoughts on a study or evaluate specific aspects of it in a positive (supporting the study), negative (criticizing the study), or ambivalent (both supporting and criticizing the study) way.</p>	<p>„Dr. David Farcy, the president of the American Academy of Emergency Medicine, warns of randomly using them [the newly developed medicament against COVID-19] in practice” (P3).</p> <p>„These data are partly doubted strongly by colleagues, but all demand more autopsies to receive more precise data” (N66).</p> <p>„No one who has ever been to the Rhineland would have the idea to trace back virus transmission at carnival only to singing” (N31).</p> <p>„The PEI [Federal Paul-Ehrlich-Institute for Drugs and Medical Products] is not seeing any connections to the vaccination, because this disease anyway occurs about 23 times per 100.000 citizens and year and the cases under investigation have not been statistically striking. British state authorities share this evaluation” (N36).</p> <p>„Not all readers share this opinion. There are two user comments to this study, and both shed light on the aspect of pre-existing conditions. The first one directly addresses the authors and points out that because of neglecting pre-existing conditions “the loss of life years has been grossly, many times over, over-estimated”. The second comment also concludes that the approach chosen “is definitely inappropriate to determine mortality rates and the loss of life years due to a new disease”” (N50).</p>
<p>3 Narratives</p>	<p>“Narratives” is coded when there are narratives to exemplify and somehow to support or criticize the presented study. The presence of narratives as evidencing practice is coded when at least one study-related actor (e.g., researcher, research institution, study participant, people affected by a study) is presented in connection with events that had or have an influence on the generated knowledge (e.g., development of research interest, personal strokes, professional career, social effects of a study, past (mis-)conducts). Narratives are differentiated from mere presentations of study results.</p> <p><u>Note:</u> Narratives can also serve as stylistic devices to underline positive evaluative ‘references Data/Methods’, ‘references to the source of the claim’, or ‘references to external experts’.</p>	<p>„... there is the Britain joint project of the University of Oxford and the pharma company AstraZeneca, the US-project of the biotech company Moderna and the project of the biotech company BioNTech from Mainz – the first vaccine works with an adenovirus of chimps, the other two work with mRNA-, so to say, messenger-RNA-technique, to transport a genetic construction plan into human cells that produces antibodies itself. These techniques are – as shown in the video – not only problematic, but also completely new grounds. Never before a vaccine like this has passed clinical trials and now this technique of the “next generation” shall be a tested on billions of people in a gigantic open-land-experiment?” (N16).</p> <p>„In a small study on hydroxychloroquine and the antibiotic azithromycin, Raoult’s team succeeded in confirming the results of the Chinese researchers. First, this message was transmitted to the Ministry of Health through the “official channels”, but unfortunately it was acknowledged with restraint. Thereupon, Raoult addressed the public via video message to present his research results. This video rapidly made its way to alternative online publications and produced some kind of “counter-public” (N7).</p> <p>“But Pfizer has a globally bad reputation. In the mid-nineties, this US company carried out illegal and fraudulent meningitis (brain fever) tests on children in African Nigeria. During the tests with the experimental medicine Trovan, 11 children died, and dozens suffered lifetime disabilities....The company succeeded in designing a clinical study for the experimental Trovan compound in six weeks, although the risks and complications associated with such tests usually require one year to make an appropriate assessment.” (N21).</p>

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2. Subcodes: thematic dimensions of (counter)evidencing practices

(Counter)Evidencing Practice	Subcodes and respective descriptions	Example(s) (translated from German)
1 References to Data/Methods	<p>Findings-related This code includes references to Data/Methods with a focus on findings. Findings can be described or evaluated, for instance, in terms of their general quality, usefulness (e.g., regarding theoretical and/or practical relevance), plausibility, correctness (e.g., did the authors make mistakes regarding findings?), consistency, and/or traceability of interpretations. Findings can also be discussed by the informative value and significance of discovered statistical intersections.</p>	<p>„According to Chinese researchers of the University of Quigdao, the Bayer malaria-medication “chloroquine”, respectively, in this country known as “resochine”, has proven to be highly effective against the coronavirus in tests under laboratory conditions” (P1).</p> <p>“On April 11th a forecast model of the association of intensive care DIVI predicted “more than 7.000 corona intensive care patients” until the beginning of May. Following this calculation model further, there would already be more than 10.000 intensive care beds occupied by covid-19 patients until the second week of May. In reality, at this time it have been no more than 4.000 and there has been no dynamic – respectively, as science and media wrongly keep calling it – “exponential” growth, but a very dynamic decline” (N45).</p>
	<p>Theory-related This code includes references to Data/Methods with a focus on theories. Theories of a study can, for instance, be discussed regarding their appropriateness regarding the research subjects and/or, in a next step, concerning the quality of derived hypotheses or the correct use of respective theoretical terminology within a reported study.</p>	<p>„The tripling of tests also resulted approximately in a tripling of people who tested positive. This tripling was publicly presented as a tripling of infected persons. However, only the slightly disproportionate increase is interpretable as speed of transmission. And this is far less alarming. How many German people came down with or infected with Covid-19 cannot be derived from these data” (N5).</p> <p>„This vocabulary is not only inhuman, because it denies affected people their individual dignity and makes them subjected to maybe controllable happening, but it is also misleading according to all existing findings” (N58).</p>
	<p>Methods-related This code includes references to Data/Methods with a focus on methods. Methods of a study can be discussed, for instance, under aspects of sample sizes and representativeness, appropriateness and limitations of used methods, analysis strategies, methods-related statistical parameters (e.g., reliability measures of survey instruments), study design and reliability figures, as well as the adherence to research standards and rules of clean academic working.</p>	<p>„Researchers of the medical faculty of the University of Duisburg/Essen (UDE) together with researchers of the University of Münster and the MVZ labor Münster have analyzed about 190.000 results from more than 160.000 people” (N49).</p> <p>„In each group, one study participant got infected with the virus. The effectiveness derivable from these raw data is 0%; just the fact that the vaccine group has been slightly bigger than the control group leads to the propagated effectiveness of 6.3%, which, however, stands opposite to an absurd 95% confidence interval of -1.405% until +94.2%” (N33).</p>
2a References to the source of the claim	<p>Expertise This code includes references to the source of the claim with a focus on expertise/credentials, e.g.:</p> <ul style="list-style-type: none"> • Implicit mentions of the academic status of an involved researcher (e.g., PhD, Professor, Director, Head of xy), involved scientific organizations (e.g., specific universities), or involved journals/publishers of a study • Explicit references to experience/expert knowledge/competence (e.g., describing involved researchers/institutions/journals as (not) progress-orientated, (in)competent, (un)experienced) 	<p>„According to a study of the University of Southampton, the initial numbers of infections in China would have been 86% lower if counter-measures were conducted only two weeks earlier” (P22).</p> <p>„This operetta-like causality seems to be an expression of political wishful thinking. Christoph Richter has no scientific competence at all regarding medical or even epidemiological questions” (P35).</p>

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	<p>Morality This code includes references to the source of the claim with a focus on morality/ethics, e.g.:</p> <ul style="list-style-type: none"> Referring ethics/character: the source is (un-)ethical or of good/bad character (e.g., compliance to research ethics, secrecy of information and research) Referring financial and other conflicting interests: the source has (no) competing financial interests or, additionally, good/bad other non-financial interests/motives (e.g., political susceptibility, prestige-related motives) Referring good/bad action: the source has associations with good/bad people/groups and/or has engaged in a good/bad action (e.g., commitment to public welfare, actions concerning benefit/harm to people, animals, or environment; actions related to information control like withholding information) 	<p>„According to an explanation of the University of São Paulo (Unifesp) that coordinates the nation-wide tests since June, the restart was allowed by the health monitoring authority (Anvisa) and the Brazilian council of research ethics (Conen)” (N21).</p> <p>„Manufacturers like Pfizer-Biontech already produce vaccines adapted to this delta type since July, which could, like yearly new built flu vaccines, be admitted in fast-track procedures, because of the “type approval procedure”. The fact that is not happening is only explainable by financial interests of these pharma companies” (N67).</p>
	<p>Characteristics This code includes references to the source of the claim with a focus on personal characteristics/appearance, e.g.:</p> <ul style="list-style-type: none"> Referring character traits rather irrelevant to the study and its claims (e.g., the open-mindedness of actors; actor’s popularity; willingness to cooperate with media representatives) 	<p>„Unfortunately, it doesn’t arise from this study if those false-positive results on the different genome sequences all derive from the same sample. Is this being the case, a confirmation test with the same kit would lead to a false-positive result as well. Our enquiries, if the confirmation tests were conducted by a test kit of another manufacturer for safety reasons, have not been answered by new information” (N15).</p> <p>„Rossana Segreto, who conducted related studies in self-motivation parallelly to her work at the University of Innsbruck and only found a journal to publish her results after seven failed attempts, received an echo outside the scientific community only in some alternative news media and some regional Austrian newspapers like the Tiroler Tageszeitung or the Kurier” (N47).</p>
2b References to external experts	<p>Scientists This code includes references to external scientists (of every discipline) to somehow comment on the presented study and related knowledge and claims. It also includes different kinds of collectives of scientists like research groups or scientific expert societies.</p>	<p>„The graduated mathematician Günter Eder had a deeper look at those data for NachDenkSeiten and received totally different numbers within the course of his conservative calculation” (N50).</p> <p>„Actually, so the „COVID-19 Data Analysis Group” (CoDAG) at the University of Munich in their critical comment on the NO-COVID-strategy, every new measure should only be invented if it at least not harms more than it protects” (N40).</p>
	<p>Scientific journals This code includes references to external scientific journals (of every discipline) that somehow comment on the presented study and related knowledge and claims.</p>	<p>„A comment of the highly regarded science magazine “The Lancet” adequately addresses those uncomfortable questions. Tests with primates showed that the “successful” vaccine candidates can minimize the viral load in the lower respiratory passages, but can’t generate an immunity in the upper airways” (N22).</p>
	<p>Media organizations or journalists This code includes references to external media organizations or journalists (can be more or less established) to somehow comment on the presented study and related knowledge and claims.</p>	<p>„Additionally, this recent study on the hardly existing infection potential of students would not fit with previous results of a research group from Dresden, as “die Zeit” [a German weekly news magazine] reported” (N18).</p>
	<p>Online blogs and portals This code includes references to any kind of external online blogs or portals to somehow comment on the presented study and related knowledge and claims.</p>	<p>„The net portal Zentrum der Gesundheit [Centre of Health] points out that the numbers in any case confirm that vaccinated people seem to have “a false sense of safety”” (P36).</p>

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	<p>Representatives of medical institutions or public health authorities This code includes references to external representatives of medical institutions or public health authorities to somehow comment on the presented study and related knowledge and claims.</p>	<p>„The PEI [Federal Paul-Ehrlich-Institute for Drugs and Medical Products] is not seeing any connections to the vaccination, because this disease anyway occurs about 23 times per 100.000 citizens and year and the cases under investigation have not been statistically striking. British state authorities share this evaluation“ (N36).</p>
	<p>Politicians or political institutions This code includes references to external politicians or political institutions to somehow comment on the presented study and related knowledge and claims.</p>	<p>„For prime minister Winfried Kretschmann the company CureVac from Tübingen is a great new hope within the fight against the coronavirus. The company is working under high pressure to produce a vaccine“ (N48).</p>
	<p>Representatives of economy/economic experts This code includes references to representatives of the economy/economic experts to somehow comment on the presented study and related knowledge and claims.</p>	<p>„The economist and author of the books „corrupted research“ and „corrupted science“, Christian Kreiß, helped NachDenkseiten by having a closer look at this scientific scandal and the connections of the study authors to the economy“ (N24).</p>
	<p>Single citizens This code includes references to external single citizens (maybe randomly chosen) to somehow comment on the presented study and related knowledge and claims.</p>	<p>„Not all readers share this opinion. There are two user comments to this study, and both shed light on the aspect of pre-existing conditions. The first one directly addresses the authors and points out that because of neglecting pre-existing conditions “the loss of life years has been grossly, many times over, over-estimated“. The second comment also concludes that the approach chosen “is definitely inappropriate to determine mortality rates and the loss of life years due to a new disease”“ (N50).</p>
	<p>Source quantity This code includes references to source quantity, arguing for/against a claim because of the number of people that agree/disagree with it and references to common collective knowledge and experiences. to somehow comment on the presented study and related knowledge and claims.</p>	<p>„Some people in Germany may not know a single person that has been tested positive on “Corona“. The number of those who know a peer that has been ill due to the virus, should be even lower. Not even to mention Covid deaths“ (P20).</p>
<p>3 Narratives</p>	<p>to portray and explain study procedures This code includes the use of narrative elements to portray and explain study procedures. <u>Note:</u> Narratives can either be neutral or somehow support or reject a study as well related actors and claims.</p>	<p>„In total, the nursing home consisted of seven different departments, spatially separated from one another. Because the spread of the virus only happened in one of those departments (80% of the patients = 17 people and 50% of the related caregivers = 17 people), but all other residents and caregivers had been tested negatively, the related ventilation systems have been inspected additionally. The involved department has been the only one having air-condition. It has been installed only recently and aimed to work energy-efficient in particular, but that ultimately caused the room air to recirculate too long. All other departments had a ventilation with regular outside air supply“ (N31).</p>
	<p>to describe personal careers of research actors This code includes the use of narrative elements to describe personal careers of researcher actors. <u>Note:</u> Narratives can either be neutral or somehow support or reject a study as well related actors and claims.</p>	<p>“Dr. Stefan Tasler has a PhD in organic chemistry and has been working in the biotech sector with a focus on active pharmaceutical ingredient research and development for 20 years. During this time, he has intensively studied the functioning of the immune system in the context of autoimmune diseases. Later, he became a research director. Between 2016 and 2019, he was part of the dual leadership of a subsidiary of BioNTech before going into research on Alzheimer’s disease as Vice President of Drug Discovery & Development.” (N68).</p>

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	<p>to highlight people influenced by study results This code includes the use of narrative elements to highlight people influenced by study results (directly and indirectly).</p> <p><u>Note:</u> Narratives can either be neutral or somehow support or reject a study as well related actors and claims.</p>	<p>„The suicide of the Hessian finance minister Thomas Schäfer (CDU) on March 29th, 2020, is another hint at the disastrous effects of the shutdown. According to the Hessian prime minister Volker Bouffier, Schäfer has worked days and nights to handle the crisis caused by corona. One can suppose that the finance minister could consider the effects of the shutdown like nobody else and he didn't see a future anymore. Unfortunately, he won't be the last one, many will follow him into suicide. Like this, Merkel's shutdown deaths will join the deaths caused by Merkel's migration politics" (P7).</p>
	<p>to analyze research actors' motives of conducting a study This code includes the use of narrative elements to analyze research actors' motives of conducting a study.</p> <p><u>Note:</u> Narratives can either be neutral or somehow support or reject a study as well related actors and claims.</p>	<p>„The virologist Hendrik Streeck from the University of Bonn has recently started respective tests for the district of Heinsberg in North Rhine-Westphalia, where the most corona infections have been reported so far ... It is good and important that this is happening. But why does Streeck need to do that by self-motivation, while people at the RKI [German Robert-Koch-Institute] keep doing nothing about that? On Tuesday, in Markus Lanz' television show, Streeck clearly pointed out that he was surprised about the inactivity of the governing authorities. Even more important that at least he is getting active" (N5).</p>
	<p>to exemplify misconducts and scandals of involved research actors This code includes the use of narrative elements to exemplify misconducts and scandals of involved research actors.</p> <p><u>Note:</u> Narratives can either be neutral or somehow support or reject a study as well related actors and claims.</p>	<p>„The work of Ferguson is supposedly also directly financed by the Gates-foundation. The Imperial College is closely working together with the pharma industry. Some examples: in 2015, a joint labor with GlaxoSmithKline (GSK) was founded; big pharma industry representatives regularly give speeches at the Imperial College, like in 2019 by Sheuli Porkess, Deputy Chief Scientific Officer of the association of British pharma industry, or by Mark Toms, Chief Scientific Officer of Novartis Pharmaceuticals UK; 2018 by Toni Wood, Senior Vice President of the GSK: he held the opening speech of the annual conference of the in-house Institute for Molecular Science and Engineering (IMSE) etc. In short: supposedly, there are long-time, intimate, and friendly relationships with the pharma industry and the Gates-foundation, both having great interests in conducting mass vaccinations" (N24).</p>

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