THE PROBLEM OF TRUST IN SCICOMM:
TRANSFORMING GLOBAL SCIENCE COMMUNICATION WITH ADAPTIVE MANAGEMENT OF LOCAL UNCERTAINTIES

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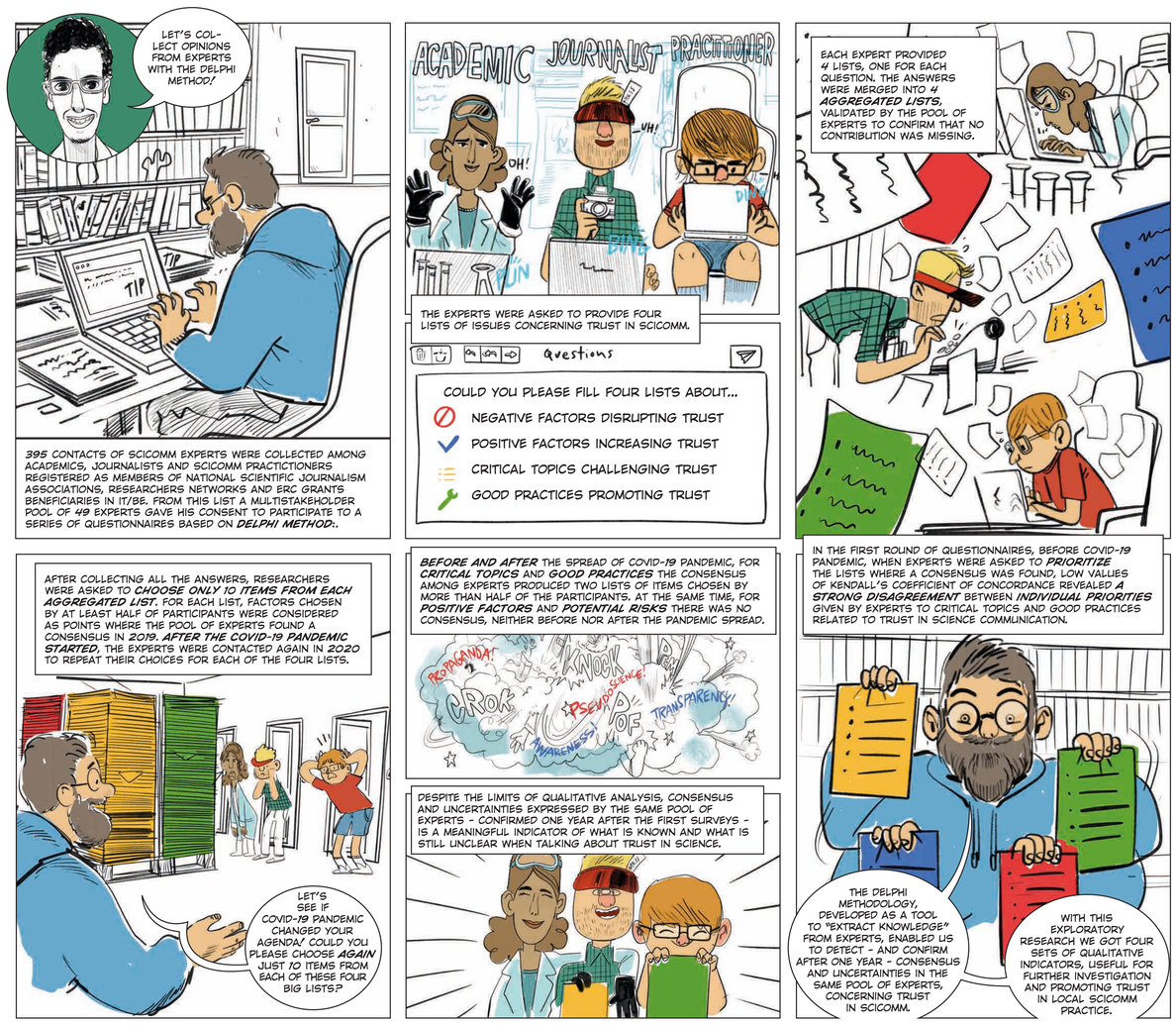
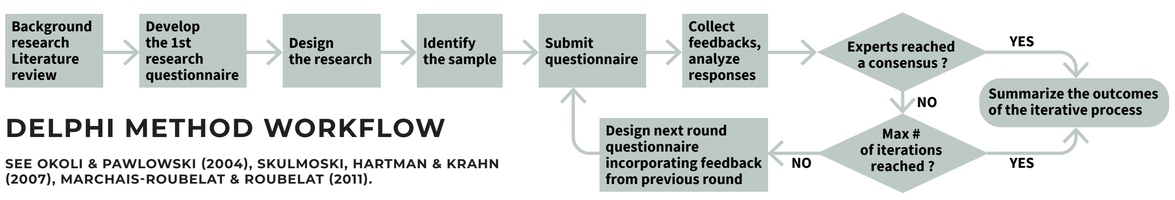
To explore the bond of **trust between science communication and lay publics**, we gathered a pool of experts including **researchers/academics**, **journalists** and **scicomm practitioners** based in **Italy** and **Belgium**. Using the **Delphi method** we answered the following research questions:

- ***Q1:*** According to the experts consulted, what are the critical **topics**, the key **factors**, the possible **risks** and the good **practices** that can affect the bond of trust between general public and science communication?
- ***Q2:*** Is there **consensus** among the experts on the above mentioned issues?

METHODOLOGY





DELPHI METHOD WORKFLOW

SEE OKOLI & PAWLOWSKI (2004), SKULMOSKI, HARTMAN & KRAHN (2007), MARCHAIS-ROUBELAT & ROUBELAT (2011).

RESULTS

CONSENSUS NOT FOUND

POSITIVE FACTORS INCREASING TRUST IN SCICOMM AMONG LAY AUDIENCES

- Increase scientific awareness starting from school
- Communicate complexity in an open and transparent way
- Encourage the habit of critical thinking
- Promote dialogue between people, experts and institutions
- Integrate science in the political decision-making process
- Education of the public, effective dissemination of science
- Reliability of the scientific communication
- Transparency
- Highlight science embedded in our everyday lives
- Improve the understanding of the progress in science and medicine
- Understanding of scientific method
- Cultural and social development
- Guarantee the quality of science communication
- Use of a clear language avoiding complexity
- Avoiding hype and sensationalism
- Firm answer to scientific nonsense
- Make science communication enjoyable and fun
- Political support to science
- Rely on the positive value associated to science as a cultural factor
- Collect feedback on the effectiveness of science communication actions
- Develop skills to deal with pseudoscience and antiscience
- Find new ways to reach people
- Infographic approach
- Merging humanistic and scientific cultures
- Political awareness
- Provide strong role models in the scientific field
- Proximity of scientific community to access, question and scrutinize research
- Reliability of the sources
- Study the social aspects of the group that you want to reach with science communication
- Making Scicomm more accessible and open
- Promoting scientific awareness among lay people
- Reaction from civil society to scientific communication
- Use of absolute risk instead of relative risk to communicate risk
- Being always respectful of other people's opinions
- Increase financial support and donations for fundamental & clinical research
- Non-polarizing behaviour
- Promote social trust
- Coordinating scientific organisations to raise a single voice
- Engagement of scientists through social media
- Increase open involvement of private companies
- Messages coordinated between governments and other organisations

POTENTIAL RISKS AND THREATS THAT CAN UNDERMINE TRUST IN SCICOMM

- Lack of critical thinking
- Dissemination of false pseudo-scientific information
- Ideological propaganda
- Anti-scientific beliefs coming from culture, education or relationships
- Conflicts of interest
- Inability to understand uncertainty of science
- Lobbying and conflicts of interests among the scientific community
- Politicians supporting opinions against scientific evidence
- Sensationalism over possible scientific discoveries raising false expectations
- Science illiterate journalists covering scientific topics acritically
- Scientists hiding or minimizing possible negative drawbacks of their results
- Political bias
- Wrong sources of information
- Increased dependance of science from economic and private interests
- Lobbying and conflicts of interests among science communicators
- Religious bias
- Scientific fraud or misconduct
- Social media bubbles or "echo chambers"
- Scientists not considering values and concerns on the side of lay audience
- Imposing scientific culture as an absolute truth
- Lack of interest over long term effects on topics like 5G, Vacines, pesticides, nuclear waste
- Lack of transparency when dealing with research misconduct
- Oversimplification
- Premature publication of scientific results rasing false expectations
- The feeling that scientific community try to hide their mistakes and doubts
- Absence of experts' voices from media
- Bad perception of Pharma companies
- Knowledge gap
- Polarization
- Scholars using traditional academic communication with lay audience
- Self-referential attitude of scientists in dealing with the public.
- Stopping of research programs (example : Alzheimer disease and Pfizer)
- Condescending / patronizing tone in communicating science
- Fear of innovation
- Increasing economic divide
- Private companies involvement in science communication
- Scientific community disregarding inputs coming from society
- Focus on unpleasant and negative science-related topics

CONSENSUS EMERGED

CONCERNED DOMAINS WHERE TRUST IN SCICOMM PLAYS A KEY ROLE

- Vaccines
- Climate change
- Role of Pharma companies
- Environmental issues
- Medical sciences
- Communication of health risks
- Public health issues

BEFORE
- GMOs
- Topics related with an increased perception of risk
- Biotechnology

● = Strong consensus emerged BEFORE and AFTER Covid-19 pandemic spread
BEFORE = Strong consensus emerged only in 2019 BEFORE Covid-19 pandemic spread

GOOD PRACTICES THAT COULD PROMOTE TRUST IN SCICOMM

- Activities in primary school to stimulate curiosity and passion for research
- Provide training about communication techniques to scientists and researchers
- Promote scientific literacy in school textbooks
- Joint initiatives between scientific institutions and the media, especially at the local level
- Public events about science

BEFORE
- Understand society concerns and engage the audience as stakeholders
- Implement regulations and laws based on scientific evidence
- Organize meetings with researchers and patients to promote trust in medical science
- Make scientific role models more visible
- Promote public science-based debates before taking public health decisions

AFTER
- Direct encounters with science communicators and scientists
- Science festivals targeted to lay audience and young people

● = Strong consensus emerged BEFORE and AFTER Covid-19 pandemic spread
BEFORE = Strong consensus emerged only in 2019 BEFORE Covid-19 pandemic spread
AFTER = Strong consensus emerged only in 2020 AFTER Covid-19 pandemic spread

CONCLUSIONS

Our exploratory research provided **four sets of qualitative factors** which may prove useful for further investigation and local scicomm practice, expressing **consensus** (for **topics** and **practices**) and **uncertainty** (for **risks** and **opportunities**). Such factors emerged from a meaningful pool of experts when asked about the bond of trust in science communication that connects lay public(s) to scientific endeavour(s).

Besides the consensus emerged over **key topics** and **good practices** to foster trust in scicomm, the disagreement over **root causes for trust and mistrust** detected with the Delphi method revealed **meaningful factors of uncertainty** in the practice of science communication.

These uncertainties confirm that communication models based on the abstraction of a generic "lay audience" are affected by the **lack of information about the specific context**, community, culture and cultural history, biases, demographic composition, misinformation and social debate characterizing the social system and the target audience where the model is applied.

The qualitative outcomes of this research, combined with previous literature on the topic of trust in scicomm, suggest an opportunity to **transform science communication practice with an "adaptive approach" to different contexts and needs**, choosing between deficit, dialogic and participative **models**, covering a wide spectrum of **topics**, using an extended set of **practices**.

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STRATEGIC IMPLICATIONS