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

CARLO GUBITOSA, DAVID DOMINGO - UNIVERSITÉ LIBRE DE BRUXELLES

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 the benefits embedded in our everyday lives
- Improve the understanding of the progress in science and technology
- Understanding of scientific method
- Cultural and social dialogue
- 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 scientific 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
- Front-row seats to teach people infographic approach
- Merging between art and scientific culture
- Political awareness
- Provide strong role models in the scientific field
- Proximity of scientific community to society, updated and available research
- Reliability of the sources
- Study the social aspects of the group that you want to share with a scientific content
- Making discussion 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-profiting collaboration
- Promote social trust
- Coordinating scientific organizations to voice a single claim
- Engagement of scientists through social media
- Increase open involvement of private companies
- Messages coordinated between governments and other organizations

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 actively
- Scientists hiding or minimizing possible negative drawbacks of their results
- Political bias
- Wrong sources of information
- Increased prevalence of science from economic and private interests
- Lobbying and conflicts of interests among science communicators
- Religious bias
- Scientific fraud or misconduct
- Moral hazard (science as "safety shutdown")
- Scientists not considering values and concerns on the side of lay audience
- Improving scientific culture as an absolute truth
- Lack of interest over long term effects on topics like 5G, vaccines, pesticides or nuclear waste
- Lack of transparency when dealing with research misconduct
- Oversimplification
- Premature publication of scientific results raising false expectations
- The feeling that the scientific community try to hide their mistakes and doubts
- Absence of experts' voices from media
- Bad perception of Pharma companies
- Knowledge gap
- Polarization
- Schism rising traditional academic scholars with lay audience
- Self-referential attitude of scientists in dealing with the public
- Wrapping of research programs (example: Alzheimer disease and Music)
- 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
- Fake or unbalanced 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
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
Strong consensus emerged only in 2019 BEFORE Covid-19 pandemic spread
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**.

REFERENCES

...

Comics by Giuliano Cangiano and Giuseppe Lo Bocchiaro. Graphic layout by Antonella Carnicelli and Carlo Gubitosa
Contents released with Creative Commons License Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

STRATEGIC IMPLICATIONS

AUDIENCE ANALYSIS. MOVING FROM THE "PUBLIC UNDERSTANDING OF SCIENCE" TO THE "UNDERSTANDING OF PUBLICS BY SCIENCE", SCICOMM PRACTITIONERS ARE USING THE "TAP" OF JOURNALISM TO ANALYZE THEIR TARGET AUDIENCES WITH QUESTIONS LIKE "WHO NEEDS TO KNOW", "WHAT IS THE KEY MESSAGE I AM PROVIDING", "WHY AM I PROVIDING THIS INFORMATION", "WHERE WILL MY TARGET GET MY MESSAGE", "WHEN IS THE BEST TIME TO DELIVER MY MESSAGE". FURTHER RESEARCH CAN EXPLORE THE EFFECTIVENESS OF A CUSTOMIZED APPROACH TO SPECIFIC AUDIENCES. SEE MOORMAN (2020), LEWIS (2020), RUCHA (2019).

PUBLIC SEGMENTATION. ANOTHER TOPIC WITH POTENTIAL FOR EMPIRICAL WORK AND FURTHER SYSTEMATIC ANALYSIS IS THE IMPACT OF SCIENCE COMMUNICATION ON SEGMENTS OF THE GENERAL PUBLIC UNDERREPRESENTED BY TRADITIONAL COMMUNICATION CHANNELS, WHICH BENEFIT MAINLY MORE EDUCATED AND HIGHER-INCOME AUDIENCES. SEE MEYER & SCHÄFER (2020), EGOLHUN (2019), SCHÄFFLE & KOHLE (2019).

MORE GENERALLY, PUBLIC SEGMENTATION CAN BE USED TO IDENTIFY SEGMENTS OF PUBLIC ANALYZING SOCIODEMOGRAPHIC VARIABLES LIKE EDUCATION, RACE, INCOME AND GENERAL PSYCHOGRAPHIC ATTITUDES TOWARD A SPECIFIC TOPIC OR BEHAVIORAL PATTERNS OF INFORMATION AND MEDIA USE. SEE KOCH, SAHSE, SCHÄFFLE ET AL. (2019).

STRATEGIC COMMUNICATION. OTHER SCICOMM SCHOLARS PROPOSED SYSTEMATIC LITERATURE REVIEWS TO ANALYZE TACTICS AND STRATEGIES COMMONLY RECOMMENDED BY RESEARCH OR PRACTITIONERS IN ORDER TO ACHIEVE BOTH SHORT-TERM COMMUNICATION OBJECTIVES AND LONG-TERM BEHAVIORAL GOALS. SEE BESLEY, CHUNG & D'ESTO (2019).

CONTENT FRAMING. FUTURE RESEARCH CAN COVER SCENARIOS WHERE EMERGING SCIENTIFIC DISCOVERIES MAY INTRODUCE SOME CONCERNS, AND AN APPROPRIATE FRAMING OF SCIENCE-RELATED TOPICS CAN PREVENT THEM TO BECOME CONTROVERSIAL, POLARIZED, POLITICIZED AND DIVISIVE IN THE PUBLIC DEBATE. SEE MOORMAN (2020) DRUCKMAN & LUPIA (2017).