



poiesis
TRUST IN SCIENCE

D2.5: Cultivating chains of mediation to foster trust in science: Recommendations

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1 Introduction

This deliverable summarises empirical work undertaken in Work Package 2 (WP2) of the POIESIS project. The focus is on the effects of chains of mediation on public trust in science. The remainder of this introductory section briefly summarises the empirical work conducted in WP2, the 3i4T model, and the concept of ‘chains of mediation’. Section 2 summarises the public deliberation workshops, Section 3 summarises the expert interviews, and Section 4 summarises the survey experiment. Finally, Section 5 provides a synthesis of findings on the mediation of research integrity and societal integration between science and society and their potential for fostering trust.

1.1 About this deliverable

This report ‘Cultivating chains of mediation to foster trust in science: Recommendations’ (D2.5) is the final deliverable of WP2. It summarises and reflects on a sequence of three previous deliverables:

- D2.2 Results from public deliberation workshops (Entradas et al., 2023);
- D2.3 Results from expert interviews (Woolley & Monsonís-Payá, 2024); and
- D2.4 Results from survey experiment (Fuglsang, 2025).

D2.5 is the result of Task 2.5 led by ISCTE with the support of all partners. The task was to “build on all previous tasks in WP2 to prepare a set of recommendations about how to cultivate chains of mediation to foster citizen trust in science.” (POIESIS consortium, 2021, p. 6). Presentation of the outcomes of these prior tasks and deliverables thus focuses on how the POIESIS Recommendations for tackling societal mistrust in science and strengthening the co-creation of R&I content by society (D4.6) can be addressed to different types of actors positioned across the chains of mediation that connect science and the general public.

1.2 About the 3i4T model

The POIESIS project is based on a conceptual approach adopted by the members of the consortium, the “Integrity, Integration, and Institutions for Trust” or 3i4T model (Figure 1). POIESIS considers integrity and integration as broadly facilitated by institutions, which through ‘chains of mediation’ affect public trust in science. The concept of public trust refers to the trust individual or social groups may have in the reliability of science and scientists. It is entangled with broader constellations of positive and negative attitudes toward science which have been explored in both cross-sectional and longitudinal studies (Allum et al., 2008; Bauer & Falade, 2021; Gauchat, 2012). The concept of integrity is concerned with the extent to which research practices are in accordance with appropriate ethical, legal, and professional frameworks, obligations, and standards. The concept of integration relates to the increased inclusion of citizens and societal stakeholders throughout the different phases of research and innovation cycles. The concept of institutions refers to the key actors and

core processes involved in the pursuit of robust and relevant R&I in the interests of both science and society. Finally, the concept of “chains of mediation” relates to the mechanisms and processes that connect integration, integrity and ethics in research practices at the work floor with the interpretation and assessment of both these practices and their products by wider publics.

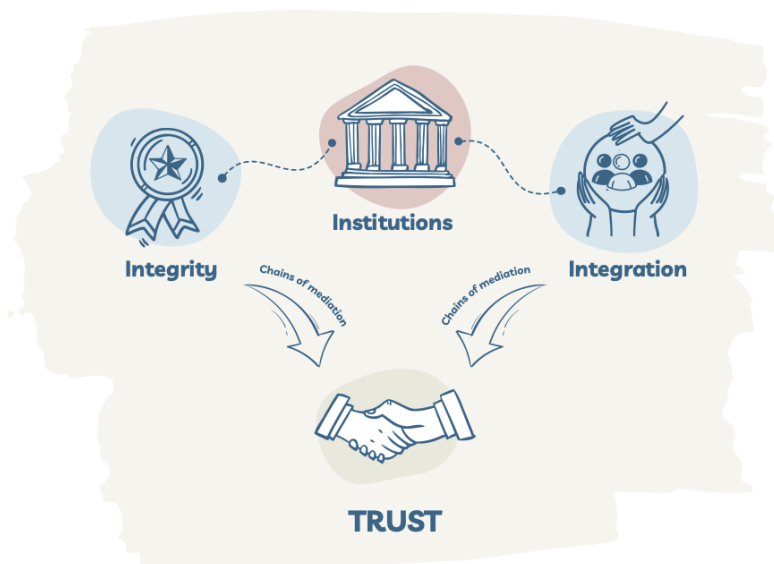


Figure 1.1. The 3i4T model

1.3 About ‘chains of mediation’

POIESIS Work Package 2 contains a series of cases studies using various methods: citizen deliberative workshops, individual expert interviews, and a survey experiment. The different methods and research objects used provide a variety of perspectives about how research ethics and integrity practices and the involvement of citizens in R&I affect public trust in science. WP2 has had a particular focus on how different types of scientific communicators translate scientific information into various public domains and to different audiences.

The concept of ‘mediation’ is important in the design of POIESIS. A ‘chain of mediation’ is understood as a translation process which moves information from one context to another. Mediation is understood to have occurred when the content or form of information is transformed in some way in this process of translation.

In POIESIS, we understand ‘chains of mediation’ as starting from knowledge production activities and research practices. Outputs of knowledge production then move through a series of actors and their networks to reach different audiences. We refer to the actors who transform the form and content of scientific information for these audiences as mediators. Mediation in part entails the cognitive and practice dimensions of mediators’ work. The different channels through which mediators’ work is diffused and circulates are also irreducibly part of the process of translation in which mediators are

engaged and themselves format and shape the form and content of the information that reaches an audience. The products of mediators' work thus promote interactions and shape understandings that structure and effect the complex relationships between science and society, including levels and dimensions of public trust in science.

The concepts of mediation, chains of mediation and translation have facilitated a shared understanding and approach across the various empirical studies in WP2. In the public deliberation workshops, participants were presented with scenarios in which the channels for receiving science related information were varied to understand the importance of different types of media, social media or other sources for maintaining or building public trust. In the expert interview study, researchers, science communicators, journalists, and other 'mediators' were asked about their work, citizen participation in science, and about the effect of research ethics and integrity practices on public trust in science. In the survey experiment, the effect of institutional factors on how citizens receive and interpret information about science was tested. The three WP2 studies thus test different aspects of the chains of mediation and provide complementary results that together improve our overall understanding of them. The results of the WP2 research studies will be combined and integrated with those from WP1 and WP3 in developing the final POIESIS recommendations on fostering public trust.

2 Public Deliberation Workshops

The first study in work package 2 was the public deliberative workshops (PDWs). The study aimed to explore public trust in science and how it is affected by research integrity values and societal integration in science. The study was coordinated by ISCTE-IUL, which developed a set of guidelines (D2.1) to support partners in running the events in their countries (Entradas & Fuglsang, 2022). The design phase and recruiting process ran from March to April, 2023, and the seven PDWs took place in each partner's country between May and July, 2023. There were 228 registered participants initially, with a total of 169 attending the events.

2.1 Design summarized

The PDWs were designed with the primary aim of eliciting a diverse set of attitudes and perspectives on public trust, integrity, and public communication. The PDWs were conducted across the seven partner countries by each consortium partner at chosen venues and dates. The events followed a three-phase structure: an initial debate/Q&A session, small group discussions, and a plenary session. These phases aimed to explore opinions and attitudes toward research integrity and dimensions of trust (e.g., scientists vs institutions vs media vs disciplines, etc), chains of mediation, and how these relate to public trust.

2.2 Findings summarized

Overall, participants expressed more positive attitudes than negative attitudes toward science as reported both during the group discussions and in the two questionnaires. However, they also showed some concerns about the instrumentalization of science by political power, for purposes of manipulating public opinion. Beyond political influences, PDWs highlighted science integrity as a key factor for participants' trust in science. Additionally, public integration can clearly bring society closer to science and scientists, but the involvement of the general public can mainly be important for trusting science in the beginning of the implementation phase rather than the decision-making process, due to the lack of expertise of lay people. Chains of mediation were seen as key in the communication process of science to the public. Different communication channels are seen with different potential to affect public trust in science: traditional media is more trusted than social media, for example, while clarity and transparency in the messages are seen as key characteristics of the message.

2.3 Recommendations

The key recommendations arising from the PDW findings build on the discussion in Deliverable 2.2 (Fuglsang, 2025).

- Integrity was conceived as both a governing principle and standard of scientific activities, but also as an individual characteristic that should guide researchers' behaviour. Although a negative perspective on integrity was conveyed in cases presented in the PDWs, participants considered them an exception and circumscribed to a specific person (the scientist), rather than systemic flaws. Integrity related factors such as lack of undisclosed conflicts of interest, unwarranted political affiliations, over-promised expectations. Therefore, there are practical implications that in order to prevent misconduct and promote a cultural of ethical research, **it is necessary to enhance research integrity training and awareness of scientists, and mitigate institutional pressure, shifting academic evaluation metrics from quantity-focused to diversified quality-focused assessment tools.**
- Public integration in science can help create a sense of belonging, encouraging public engagement in science and technology issues, and facilitating a more comprehensive understanding of scientific knowledge. In most of the participants' views, providing citizens with decision-making power in sensitive, controversial topics requiring great expertise, such as the vaccination of children, was considered inappropriate and even irresponsible. Participants showed concerns that, often integration is not meant seriously, and that pseudo participation projects can backfire and be detrimental for trust. **While greater public engagement can be beneficial, the desirable extent of citizen involvement as well as the suitable topics that citizens can meaningfully contribute to, needs consideration.**
- Science communication appears to work as a crucial factor for trust in science. Several factors for trusting science communication emerged, especially concerning aspects of clarity and accessibility of the language, types of sources of information, credibility and reputation of the actors who communicate science (institutions or individuals). Hidden interests of journalists or the media were perceived as factors for distrusting a communication actor or channel. A core component of trust was the presence of independent institutions and self-control mechanisms that allow for good communication. Therefore, **transparency in the scientific process, as well as scientific self-control mechanisms, such as peer-review, and open science practices can contribute to trust in science. In this sense, it is expected that scientific institutions, peers, and media can act together as watchdogs to reveal cases of bad practices, and communicate clearly and openly with non-specialists.**
- Traditional media were considered more trustworthy sources than social media. However, the mainstream media is seen as losing its voice to social media, which causes public concerns. Social media was seen more critically, with participants arguing that it can also be a source of disinformation, as there is no control or monitoring of what is shared in social media channels. Social media channels were seen as capable of reinforcing certain worldviews rather than maximising diversity of viewpoints, that is, people are presented with information that confirms their ideas. **Science communication should align with scientific values, rigour and quality, regardless of the channel used.**

3 Expert interviews

The second study (T2.3) in Work Package 2 was the expert interviews study (EIS). The EIS was led by CSIC with participation from all partners.

3.1 Design summary

While not a required POIESIS project deliverable, a comprehensive research protocol was prepared that detailed all aspects of the EIS research design and approach (Monsonís-Payá & Woolley, 2024). The EIS Protocol went through several iterations in its development, based on comments from all POIESIS partners, discussion at the General Assembly held in Lisbon in February 2024, and with additional direct support from the Project Coordinator (Aarhus) and Work package 2 Lead (ISCTE). Work on the protocol commenced in November 2023 and the final version of the EIS Protocol was posted as an open document on the POIESIS Zenodo community on 7 May 2024, prior to fieldwork commencing.

Two distinct interview instruments were developed in order to address the EIS research questions. The first focused on Researchers in universities or research institutes who communicate their work to non-academic audiences, with an emphasis on investigating the **societal integration dimension** of the 3i4T model. The second focused on Mediators working between science and the public with a focus on the **integrity dimension** of 3i4T. The two interview instruments used the SARS-COV-2/COVID-19 pandemic and climate change as case contexts. POIESIS partners conducted a total of 119 interviews with institutional and non-institutional experts for the EIS.

3.2 Findings summarized

The EIS investigated the critical approach of the POIESIS project design to the assumption that **research ethics and integrity** issues in the conduct of science have a significant effect on public trust in science. Neither Researcher nor Mediator participants considered there was a significant direct relationship between formal ethics and integrity practices in science and the level of public trust in science. Many mediators working outside research organisations, such as journalists or (independent) science communicators, considered it their responsibility to reveal problems such as scientific misconduct in the public domain. They were strongly of the opinion that this was beneficial for the scientific system and actually worked to reinforce public trust by showing that bad conduct has consequences. Nevertheless, this view was not evenly held across countries with the perception that the public in France and the UK are more concerned about misconduct than elsewhere. Researchers are very rarely confronted with concerns about scientific misconduct in their

interactions with citizens. Researchers also consider that public exposure of scientific misconduct gives citizens confidence that the integrity of the scientific system is sound.

In the context of science communication, **integrity can be understood as a function of the assessment of credibility of information sources and providers done by Mediators** in the process of preparing, doing their work, and producing their outputs. The interpersonal networks that Mediators use can stretch from the shopfloor of science to different groups of citizens, and cross professional communities of practice in science and media. Assessments of the credibility of information and scientific findings are embedded in these practices and appear vitally **important for translating trustworthiness to the various audiences that Mediators reach**.

Both Mediators and Researchers view **science communication** as having undergone an intensive ‘stress test’ in the context of the COVID-19 public health pandemic. They also agree that “follow the science” is not a viable communication strategy if public trust is to be maintained in times of crisis. Mediators and Researchers felt under pressure to communicate amidst a chaotic churn of (dis) and (mis)information. This crisis also highlighted Mediators’ perceptions that not all scientists should communicate science if reinforcing public trust is a goal as many/most lack the necessary capabilities. They should rather develop relationships with competent professional communicators. Mediators were also of the opinion that the public is largely convinced that the scientific evidence about climate change is strong. In contrast, they consider the public sceptical about the science of COVID-19. Many mentioned that people believe that interested parties, be they in industry, politics, or science, were seeking to manipulate public opinion. Indeed, the space for communication of science in the context of the pandemic became submerged by contests over values and beliefs, causing anxiety or distress for some experts involved in this space.

It was a consistent finding across different expert groups and the seven POIESIS countries that trust in science is not evenly distributed across different segments of the population. Both Researchers and Mediators believe this level of trust is linked to the primary channels through which different groups of citizens obtain information or conduct interactions about science.

3.3 Recommendations

- Enhancing the **involvement of citizens in science** is perceived positively by Researchers and Mediators. Mediators believe that citizen science and other interactive contexts for the public to participate in science have the effect of expanding the audience for their work, with the potential to positively benefit scientific literacy and reinforce public trust. Researchers believe that uncertainty and lack of consensus about results can be one of the most difficult aspects of science to communicate to the public. They consider efforts to increase citizen integration in scientific processes of all types would be an important mode of communicating these aspects to citizens. Researchers also strongly believe that there are limits to the contexts in which it is appropriate to integrate citizens in the research process. **Increasing participative structures, mechanisms, and opportunities across chains of mediation** - from the lab to the neighbourhood – **have the potential to create a patchwork of citizen integration that can help build a culture of public trust**. But there are limits, in context

sensitivity and in scale, that mean social integration cannot substitute for a sound, well-resourced, societal-level institutional communication strategy, but can complement and enhance such a strategy.

- Experts strongly believe that strong and proactive **social institutions, including education and training organisations, public administration at all levels of government, and research performing organisations**, are essential to promote public trust in science. Historical and cultural characteristics of the general trust in institutions vary among POIESIS countries. Experts consider these as having an underlying impact on trust in science everywhere. Experts in science communication advocate greater investment in key institutions including education, scientific literacy, and public infrastructures. These should be better designed to raise the capacities and opportunities of citizens to engage in and with scientific culture and work. For Mediators, such investments would expand audiences that perceive their work as interesting and relevant to their lives. Researchers reiterated widespread concerns about institutional academic and research career evaluation systems that do not provide incentives for professional communication training, or to the dedication of time and resources to science communication and dissemination, public engagement work, or citizen science.
- **Chains of mediation tend to be quite consolidated for most professional science communicators.** Mediators working in research performing institutions tend to perform their activities within stable networks where they interact directly with researchers on one side and other types of Mediators, particularly journalists, on the other. These institutional Mediators have relatively less freedom about topic choice and produce more routinized types of outputs, such as press releases. Mediators working outside research organizations are able to be more flexible, both in terms of topic choice and the angle they want to develop in order to attract the attention and hold the interest of their audience(s). These Mediators also have more freedom to adopt a critical perspective on scientific information and view it as important that they do so in the public interest. Mediators' outputs thus tend to be more diverse, and target a wider range of audiences, when their location in the chain of mediation is relatively further from scientific institutions. **This variability according to position in chains of mediation should be taken into account when developing Recommendations to support public trust in science.**

4 Survey Experiment

The final study in Work Package 2 was the survey experiment. This study investigated how trustworthiness of research performing organizations was affected by institutional commitments towards research integrity and societal integration. The study was headed by Aarhus University with assistance from all partners in design and translation. The design phase ran from April to September 2024, as outlined in the task protocol (Fuglsang, 2024). The survey was fielded in November and October 2024. At minimum 400 adults were recruited (through Norstat) in each of the seven POIESIS partner countries, in total a sample of 2847 participants.

4.1 Design summarized

The study set out to test how institutional commitment towards different forms of research integrity and societal integration would affect trust in science. It did so by implementing a conjoint experiment, in which participants rated the trustworthiness of fictional universities which were randomly assigned levels of commitment to: 1) Research integrity principles, 2) safeguarding against outside influences, 3) securing diversity and inclusion among staff, 4) hearing the public when it is affected by research, and 5) communicating research findings to the public. Additionally, to test potential heterogeneous effects across organisational reputation, universities were randomly assigned levels of prestige or achievements within specific fields of research.

4.2 Findings summarized

The main finding of the survey experiment is that institutional commitments toward research integrity and societal integration cause higher trustworthiness evaluations. Providing additional information on the reputation of the fictional universities generally do not change the effects of commitments to integrity and integration. Additionally, positive effects are observed across all seven partner countries. However, contextual differences in patterns of effectiveness are apparent.

However, while institutional commitment towards research integrity and societal integration does affect trust, there is little clarity regarding the roles of the levels or forms of commitment. As such, it seems that people generally do not differentiate strongly between the characteristics of institutional commitments, but mainly between whether they are present.

No marked patterns in effect sizes are observed across individual characteristics, with the notable exception of prior trust in science. Specifically, the effect of institutional commitment is only observed among individuals who indicate to trust science prior to the experiment, whereas participants who do not trust science are not affected by institutional commitments.

4.3 Recommendations

Given the surveys' focus on how the public receives information on institutional commitment, its findings are clearly of relevance to mediators who aim to link the institutions of science and the broader public. However, they also have implications for policymakers and institutional actors in research performing organizations (e.g. research leaders, department heads, and research integrity officers), who play key roles in producing and implementing institutional frameworks.

- **The main finding of the study is that institutional commitments towards research integrity and societal integration affect trustworthiness perceptions.** This is of obvious relevance to actors bridging science and society. Such a finding is in line the core of the assumptions that POIESIS investigates, reiterating that **public trust is sensitive to institutional commitments towards research integrity and social integration.** However, **this should not be read as an indication that securing research integrity and societal integration is a guarantee of a positive science-society relationship.**
- Crucial to this, is the finding that participants in the survey experiment do not exhibit large differences in their reactions towards different kinds of nor level of commitment. This could indicate that it is committing to good practice as such, rather than the specificities of these practices which matters (which resonates with prior findings; Anvari & Lakens, 2019; Hendriks et al., 2020). This is further underlined by the fact that most participants indicate that expertise is the most important for evaluating the universities. This might be interpreted as an indication that quality and integrity are seen as intertwined, as also proposed by Rosman et al. (2022). This highlights the need to **be cognisant that the understanding of research integrity and societal integration is not necessarily shared between science and society.**
- In a similar vein, the level of interest that people have in information about research integrity and societal integration is limited. Even in a study in which participants are recruited and compensated for their time, the motivation to interact with such information is limited at best (mirroring findings in the German population; Mede et al., 2021). These findings underline a **need for considering that information on research integrity and societal integration are not of high public interest,** and that **the societal effects of research integrity and societal integration likely require specific conditions** (e.g. increased interest based on specific crises; Bromme et al., 2022; or scientific breakthroughs; Hilgard & Jamieson, 2017).
- While results show effects across all countries, specific patterns in how different institutional commitments matter for trustworthiness ratings is a clear indication that contextual factors matter for how information on science is received (also noted in POIESIS WP1; Bauer et al., 2024). As such, the universal presence of the effects of the study should not be mistaken as a cause for disregarding local characteristics. In fact, some of the apparent lack of differentiation between forms of research integrity and societal integration could perhaps be better understood through a deeper understanding of the contexts of the seven partner

countries. It is recommended that **context should be considered when communicating integration and integrity.**

- Finally, a key point raised by the survey experiment is that the efficacy of communicating institutional commitments towards research integrity and societal integration is dependent on prior attitudes toward science. If, as results indicate, people who have low trust in science are not markedly affected by commitments regarding research integrity and societal integration, this implies that these procedures are not a silver bullet for ensuring societal trust. On the other hand, effects among people who already trust science could be seen as an indication that research integrity and societal integration is needed to maintain trust. This is a clear indication that **in mediating between science and society taking audience, message, and mission into account is key.**

5 Perspectives on chains of mediation

POIESIS tested the assumptions that research integrity and societal integration in science is important to strengthening and maintaining public trust in science, particularly in the context of science-based controversies such as climate change and COVID-19. The design of POIESIS has enabled the development of multiple perspectives on how integration, integrity and institutions impact public trust. By generating primary data from sources including researchers, journalists, science communicators, institutional ethics officers, and citizens, POIESIS provides the basis for a comprehensive approach to recommendations that target different actors and domains that connect science and society. In this section, we highlight the main points on chains of mediation, that come from the three studies described above.

- Whilst citizens do have concerns about the conduct of science, they do not base their assessment of the trustworthiness of scientists or research findings on formal markers such as ethics approvals. Similarly, non-institutional mediators, typically working in media companies or independently, do not assess the credibility of the scientific information they use in their work on the basis of formal markers. Rather, they combine their experience of how scientific discovery operates, their knowledge of prestigious organisations and scientific outlets, and their interpersonal connections with researchers, ethics experts and other professionals, in assessing the credibility of the results and information they work with. **Research integrity practices thus tend to be indirectly inferred or embedded in the work that mediators provide to their audiences, often without being explicitly discussed or even mentioned. At the same time, some mediators, particularly specialist science journalists, are important actors in exposing actual integrity or ethical problems in science and view this as a vital part of their professional role and their contribution to the public good.**
- Closer to science, researchers and institutional ethics officers place greater emphasis on the importance of community norms and the formal procedures and processes that foster integrity and ethics in science. The outputs of their work may not always be shared directly with the public. However, they often do provide information and inputs to the work of mediators. Many researchers do interact directly with citizen audiences of different kinds to promote and divulge science in a range of public contexts. The translation of the propriety and integrity of science to these audiences is reinforced by these actors and their direct involvement in research ethics and integrity practices.
- While the public seemingly recognizes the value of good research practices and are more trusting when research integrity and societal integration is secured, such practices should not be mistaken for a silver bullet for mediators or institutional actors trying to handle public (mis)trust of science.
- Similarly, the participation of the public across the spectrum from scientific knowledge production to dissemination and popularization is broadly viewed as positively for awareness and understanding, particularly of the uncertainty and provisional nature of much scientific work. But this participation should have limits. Providing citizens with decision-making power in sensitive, controversial topics requiring great expertise, was considered inappropriate. **While greater public engagement can be beneficial, the desirable extent of citizen**

involvement as well as the suitable topics that citizens can meaningfully contribute to, needs consideration.

- Clarity, accessibility, sources of information, credibility and reputation of the actors are key characteristics of communication seen as crucial when communicating about science. Traditional media are more trustworthy sources than social media, and the use of social media is seen more critically to communicate science. Chains of mediation **should base their communication in scientific values, rigour of the scientific process and quality.**
- The representatives of the public involved in POIESIS do not always agree on what makes science trustworthy, and the logic behind their evaluations are clearly not identical to the logic of the systems that implement integrity and integration measures. Moreover, it should be noted that interacting with the public on matters of research integrity could meet a barrier of public interest. Stories on the practices and procedures of the (proverbial) lab are not all of a similar societal interest, and doing research by the book is not necessarily of high newsworthiness. Mediating between science and society can have multiple functions, and being cognisant of the conditions and aims in bridging the two is key. **Specific conditions call for specific forms of communication and/or dialogue, and the degree to which mediators can play a role as builders or maintainers of trust in science is clearly different across cases and contexts.**

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