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Reflections on the Metascience Conference 2025

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Metascience Conference 2025

In January of 2025 the Journal of Clinical Epidemiology revised its scope to explicitly include the term “Metascience”. To many researchers across the globe, meta science may be a new or unfamiliar term. They may reasonably ask the question ‘What is meta science? The Metascience 2025 conference held at University College London, UK (June 30th-July 2nd) was an opportunity for me to reflect on this question as a member of the journal’s Editorial Board.

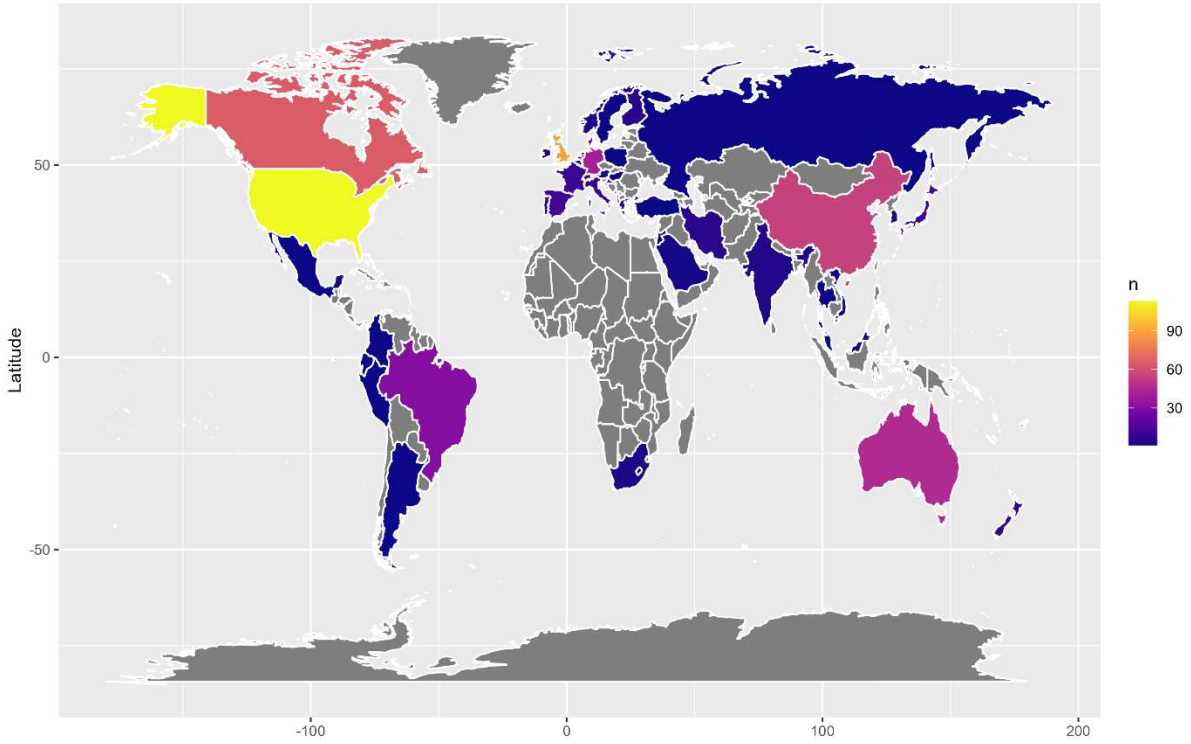
The conference provided a hub for reflection for speakers across social and physical sciences, philosophy of science, information and computer science as well as biomedicine. A vast array of speakers from this diversity of backgrounds critiqued how research is conducted, reported, disseminated and replicated. The content of the conference therefore aligned well with the scope of the Journal of Clinical Epidemiology, and its overarching aim to improve population health though the advancement of high quality, innovative methods. As the conference proceeded, several key themes emerged.

Inclusivity and Accessibility

An Elsevier report discussed that gender parity in research careers is progressing globally however equity varies across countries and academic disciplines.(1) Professor Cassidy Sugimoto, of the Georgia Institute of Technology, explored the displacement of the US as a scientific superpower by China using metrics heavily focused on citation of published academic papers. As academic prestige or success shifts, according to traditionally valued citation analyses, she emphasised that investigators should retain diversity in scope, in measurement and in perspective. It is also worth considering the ethics of shifting success metrics, particularly when dominant players begin to lose ground. As a nation with a vast population, Dr Li Hui, of the Shanghai Institute for Science of Science, raised that China inevitably faces internal problems when its divergent communities question why research

isn't observing the inequities in their individual provinces. Whilst there are promising metascientific inroads in Africa such as the African Reproducibility Network (AREN) and the Science, Technology, and Innovation Strategy (2025-2034), these new initiatives may not represent all countries across the continent and therefore implementation and applicability of initiatives across and between African nations may lack parity. There is an important nuance: metascience is a privileged genre of research, (Figure 1)(2) and there are more pressing and desperate research issues affecting low and middle income (LMIC) countries. This raises a key question: how sustainable and applicable is Metascience for researchers in LMIC and the Global South?

Figure 1. Articles Scrutinising the Conduct of Systematic Reviews (1)



Transparency and Open Science

Reflecting on how things have improved 20 years on from when John Ioannidis wrote that "most published research findings are false" in 2005, he highlighted promising improvements such as increased rates of data sharing and signs of convergence between global health burden and funding prioritisation. However, he cautioned that the likelihood of completely fraudulent papers is much higher in an era where such manuscripts can be created with great ease and very little input from human authors. Metascience 2025 featured sessions and representatives promoting different open science practices and initiatives, such as a preprint open peer review for meta-research (MetaROR), improving metadata reporting and

methods to enable future metascientific analyses (e.g. metahelper).(3) The interests of publishers and open science advocates may not fully align in the near future. Academic publishers generate high profits both through article processing and licensing charges, imposing costs on researchers and institutions. However, publishers also have an interest in ensuring that the research they publish is of high quality and robust and many journals have embraced pre-print publications, preregistered reports alongside data sharing through open science platforms. The researcher's choice to embrace open research practices requires acknowledgment of the continuing chokehold that academic institutions place on journal papers in researcher assessment(4) There is work to be done in relation to valuing a more diverse range of research outputs beyond traditional academic research papers which requires involvement of a range of interest holders, including journal publishers, academic institutions and funding bodies to ensure that research findings have real-world impact beyond academic audiences.

Rigour and Innovation

The opportunities of artificial intelligence (AI) for the field and indeed the necessity for responsible accountability in those profiting from it, was debated at Metascience 2025. There was mention of the need for more disruptive papers in relation to challenging dominant paradigms in research as well as enabling the future generation of researchers to embark on higher-risk projects. Are metascience researchers leading by example? In critiquing research, we should insist that basic criteria of quality are upheld in research-on-research. In our collaborative evaluation of the problems with published systematic reviews (5) we have observed that meta-research articles frequently fail to adhere to the standards they expect of the work they are appraising and that meta-research is increasingly contributing to research waste, with many included articles failing to acknowledge or add to well-established findings (usually that systematic reviews frequently don't comply with reporting or methodological guidelines).(2) Over the last two decades there have been radical shifts in how people source and share information and creative developments that have occurred in industry, such as in social media, are not necessarily reflected in academic outputs and evaluation. A future challenge in this emerging landscape for metascience, is duplication of effort as new initiatives, technological developments and networks may suffer from the silo effect when feedback and collaboration are not widely invited.

Objectivity and Public Trust

Metascience risks projecting epistemic superiority through a quantitative-focused lens. Even the terms “science” and “data” can potentially deter relevant (non-STEM) contributors from engaging and suggests a lack of reflexiveness away from positivist research. But scientific self-reflection as a movement has the potential to bridge different fields of study in a rapidly challenging research landscape, navigating the influences of powerful corporate sponsors, by communicating and listening with humility, through collaborative and integrative research processes. The pursuit of objectivity in science isn’t to be a robotic, detached scientist; it’s to be a passionate, engaged and highly collaborative researcher that can reflect critically on the positionality, biases and conflicting interests of themselves and others when pursuing topics in the field. Methodologists need to keep real-world problems at the forefront of their consciousness. The public want to trust that metascience is not an ivory tower and that scholars, often working from positions of relative privilege, are advocating for R&D decisions which will benefit the human condition. In a climate of scientific mistrust, research on research can be weaponised by patronage networks in the game of institutional and international competitiveness, effectively turning inward as a battleground for institutional and geopolitical agendas. Meta-researchers as individuals can be activists for systematic change in research culture, advocating for inclusive and diverse empirical research formats, modelling transparency in their own outputs, through rigorous and scientific accountability.

For metascience to fulfil its transformative potential, joined-up efforts are required that hold all actors accountable (from researchers to institutions and publishers) for building a research culture that is as rigorous as it is reflective. Metascience should remain alert to the global inequities that shape who participates in, benefits from, and is represented by the scientific enterprise. As I couldn’t attend every session at the conference the following sources provide comprehensive overviews of the topic of metascience:

UK Metascience Unit

Centre for Open Science

Research on Research Institute

Conflict of Interest Declaration

I acknowledge the privilege of my position having been funded by the UKRI MRC to study the integrity of meta-research. I am grateful to have received trust from the progressive

Editors-in Chief of JCE to explore emerging, creative approaches to draw together insights on research culture and how it influences research outputs(4) as well as the opportunity to attend the conference.

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