House of Commons Science and Technology Committee 'Reproducibility and research integrity' inquiry

Response from CLOSER, the home of longitudinal research (UCL Social Research Institute)

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1. About us:

1.1 CLOSER, the home of longitudinal research[1], brings together leading social and biomedical longitudinal population studies to increase their visibility, use and impact. Our studies[2] comprise of both national and regional studies from across the UK. They include the British Birth Cohort Studies, ONS Longitudinal Study, English Longitudinal Study of Ageing, Born in Bradford, Southampton Women's Survey, Avon Longitudinal Study of Parents and Children, Generation Scotland, Understanding Society – the UK Household Longitudinal Study, and more.

1.2 CLOSER has been funded by the UKRI Economic and Social Research Council (ESRC) since 2012 and is based at the UCL Social Research Institute.

2. Our reason for submitting evidence:

2.1 CLOSER represents multiple longitudinal population studies across the UK. These national scientific assets follow the same people and households over time, often from birth, collecting a wide array of data and information about study participants, which enable researchers and policymakers to explore people's complex lives and how changes in society affect health, community and education.

2.2 These studies are recognised as vital sources of evidence on how early circumstances and experiences affect people's lives from childhood to adulthood, providing insights into individual short and long-term change and the relationship between different elements of people's complex lives that cannot be obtained from any other data sources. They allow researchers to explore how different groups vary, and how and why people's lives change, enabling a greater understanding of the difference between causal relationships and correlation.

2.3 Our response focuses on the following topics from the call for evidence:

- the role of the following in addressing the reproducibility crisis:

    o research institutions and groups;

- the issues in academia that have led to the reproducibility crisis

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[1] https://www.closer.ac.uk
[2] https://www.closer.ac.uk/timeline/

3. Evidence:

3.1 The UK has a long-standing tradition of longitudinal population studies (LPS) and research. Since the first national longitudinal birth cohort study commenced in 1946, there has been continued growth in the number and diversity of both LPS cohort and panel studies in the UK. These studies serve as an important research resource, capturing detail across participants' lives that can help further our understanding of socioeconomic and biomedical outcomes and their respective determinants. Collectively these studies can enhance our understanding of cross-generational changes in such social and health issues. The wealth of data collected by these studies is increasingly made accessible through deposit at archives/repositories and via trusted research environments, yet such accessibility efforts remain variable in implementation and completeness across studies due in part to funding differences and cost recovery needs. Moreover, heterogeneity in the data sharing solutions implemented means that discoverability remains a challenge. A related hurdle pertinent to research reproducibility is that provenance detail for research datasets, which is essential to their valid use and interpretation, is sometimes fragmentary or absent, and this can impact on consistency in their reuse by different research teams.

3.2 CLOSER is leading work in collaboration with its partner studies to address such data discoverability and provenance needs through its cross-study CLOSER Discovery platform[3], which integrates questionnaire and variable metadata in an open and consistent format. This employs well established open standards (DDI Lifecycle for data documentation)[4] which enables the development of further innovative software and standards, for instance, to make documentation of data processing code[5] transparent. Surfacing data processing decisions in accessible language, facilitates and encourages communication between researchers with different software experience and expertise. Such standards around data and code documentation play a vital role in ensuring the processes and decisions underpinning research work are captured in a manner compatible with the FAIR principles of findability, accessibility, interoperability and reusability.

3.3 Even with adequate resources facilitating more open and standardised documentation, additional effort is needed to encourage uptake amongst the research community. Such effort will be most effective by targeting both individual and structural factors. These individual factors include training and mentoring programmes to promote intrinsic motivation around research integrity and develop relevant skillsets amongst researchers, e.g. to implement documentation standards and leverage related tools in their research practice. More structural work should include influencing the external factors that underpin the professional advancement procedures that more broadly dictate capacity and resource prioritisation. Career development frameworks within academia do increasingly acknowledge contributions to open science practices but such factors remain distinctly secondary to other promotion-relevant factors such as success at

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[3] https://discovery.closer.ac.uk/

[4] https://ddialliance.org/Specification/DDI-Lifecycle/

[5] https://ddialliance.org/products/sdtl/1.0

funding applications and lead/senior authorship of manuscripts. There needs to be parity for time-poor researchers to pursue what is otherwise less individually beneficial targets in their work. That individual-vs-collective divide in thinking and effort is in itself at the heart of many of these issues.

3.4 As the national consortium of longitudinal population studies, CLOSER serves as a centre-point for cross-disciplinary engagement, knowledge exchange and training provision. Through this collaborative and coordinating role, alongside its stakeholder position in the UK Reproducibility Network[6], CLOSER can play an important part in supporting increased implementation of reproducible research processes amongst the longitudinal population study community. The CLOSER Learning Hub[7] already leverages existing research outputs as the basis of longitudinal research training. It also comprises a new introductory module on metadata concepts that provides foundational understanding on topics at the heart of research reproducibility challenges. Through its training programmes, its communities of practice and its cross-network knowledge exchange events, CLOSER can help give voice to the needs of the longitudinal research community in ensuring the challenges of reproducible research and research integrity in this context are better understood and in turn better addressed through collective action.

4. Recommendations:

4.1 Addressing the joint challenges of research reproducibility and integrity requires committed effort from funders, institutions and other relevant actors in the data and research ecosystem, e.g. publishers, to work together to address both structural and individual-level barriers within academia and across research disciplines. Incentives to adopt open and transparent research practices should be a priority in this effort.

4.2 As a globally unique scientific resource, the UK longitudinal population studies can play a key collective role in fostering improved practice and developing cross-disciplinary strategies for addressing these challenges.

4.3 Collaborative initiatives such as CLOSER are effectively positioned to support researchers from diverse backgrounds in understanding and pursuing better standards of reproducibility and rigor in their work through (i) community-led dialogue and action, (ii) cross-disciplinary training provision, and (iii) the development and promotion of shared infrastructure that directly support research openness and transparency.

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[6] https://www.ukrn.org/
[7] https://learning.closer.ac.uk/