

How societal impact is understood and approached across a newly formed community of researchers with an ambitious ‘health of the public’ agenda

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Abstract

There is an increasing requirement for universities to demonstrate positive societal impacts of their research output. New approaches to research operationalization are being called for, including in relation to research for the public’s health, yet orienting research towards societal impact has profound practical implications for individual research projects as well as for academia. It is therefore important for us to understand how researchers and other engaged parties understand impact and how they plan and evaluate it. Hence, we undertook a series of interviews with members of research groups involved in impact planning and evaluation in each of the Consortia within a novel programme of funded research: the UK Prevention Research Partnership. Six main themes emerged from the analysis: defining impact; programme theory & pathways to impact; stakeholder analysis, engagement and co-production; measuring and reporting impact; challenges, structural barriers and lessons learned; funder influence. The results show that: there is a wide-ranging plurality of understandings when it comes to impact and how to achieve it; training appears needed in developing robust theories of change; there is a need for funders to be more explicit about what they expect from co-production; stakeholder analysis is important for not only understanding the problem space, but also for mapping pathways to impact; evaluating impact across complex systems is highly challenging and requires much greater attention. These findings should help researchers to optimize their strategies toward achieving societal impact, and support funders in being more explicit about what they expect regarding planning for and reporting on societal impact.

Keywords: impact; research operationalisation; research funders.

1. Introduction

This paper focuses on the idea of ‘impact’ within the context of academic research in the UK. The requirement for universities to demonstrate positive societal impacts of their research output is increasing (Stern 2016; The UK Prevention Research Partnership 2018; UK Research and Innovation 2024). Global challenges such as the climate and biodiversity crises, and the rising burden of non-communicable disease and health inequalities underpin the urgency of the importance of such a requirement. Given the significance and complexity of many societal challenges, new approaches to research operationalization are being called for, including in relation to research for the public’s health; the practical area of research examined in this paper (Moore et al. 2019; Skivington et al. 2021). Alongside familiarity with systems approaches to address practical complexity, this area is defined by principles of inter- and transdisciplinary working, the need to investigate root cause issues upstream, and to engage in co-production with partners/stakeholders (Hall et al. 2012; Bammer 2013; The UK Prevention Research Partnership 2018). There is already considerable knowledge of these new ways of working, but it tends to be found only within specialist enclaves rather than being core to mainstream research delivery (Funtowicz and Ravetz 1993; Syme 2008; Bammer 2013). Yet orienting research towards societal impact has profound implications for individual research projects as well as for academia as a whole (British

Academy 2016; Lawrence and Gatzweiler 2017; Black et al. 2023b).

It is therefore important for us to understand how researchers and other engaged parties—including organizations that fund, monitor, support, and review research—understand and operationalize impact and how they evaluate it. To this end, we undertook a series of interviews with researchers involved in impact planning and evaluation in each of the Consortia within the UK Prevention Research Partnership (UKPRP) (UK Prevention Research Partnership 2019). The mission of the UKPRP is, through preventive measures, to lessen the incidence of non-communicable diseases (NCD) and reduce health inequalities. The UKPRP was established in 2017. It has 12 funders, both Government-supported and independent, and to date has funded seven major research programmes over two rounds, alongside four networks. Its practical focus is on methods of preventing non-communicable disease and health inequalities. This focus includes physical conditions such as cancers and cardiac disease, as well as mental health conditions such as depression and anxiety disorders. The agenda is emphatically outcome-oriented: the UKPRP aims for reductions both in the overall incidence of ill health and in addressing inequities in the distribution, across society, of better and worse health.

The UKPRP can be seen as innovative for three reasons. First, it looks to health benefits over a long-term time horizon: its aims are for immediate and nearer-term changes to

systems, practices, and structures, but with a view to securing health improvements across a generation. Secondly, it looks to the realization of such benefits with an understanding of complexity in causal structures concerning determinants of (ill) health: it invites an analytical and epistemological embrace of complexity, with disregard for singular, linear explanations of causal pathways. Thirdly, to achieve its aims it accordingly promotes both inter- and transdisciplinary research. This means incorporating epistemologies, methods, and approaches of disciplines that may not, historically, be considered ‘core’ sites of (public) health research. It also demands meaningful collaboration and co-production with non-academic partners ([The UK Prevention Research Partnership 2017](#)).

The UKPRP accordingly requires collaborative research efforts across radically-varying disciplines from within the health sciences, physical sciences, social sciences, and the humanities. This inevitably creates challenges for how phenomena are conceptualized and theorized. In particular for readers who are unfamiliar with the UK’s university research environment, it is crucial context to recognize that there is energetic, general contestation over the meaning of impact itself. This is compounded in particular, by the place and value of impact within the UK’s auditing exercise for evaluating and ordinally ranking universities’ research output; the Research Excellence Framework (REF) ([Research Excellence Framework 2024](#)), the outcomes of which are used to inform the allocation of around £2 billion per year of public funding for universities’ research. Put simply, there are headline differences regarding the meaning of impact ([Grant 2015](#); [Stevenson 2023](#)). Yet these are more subtly complicated for two reasons. Firstly, REF provides a narrowed, technical means of understanding impact that even on its own terms does not purport to be comprehensive (i.e. it provides particular conditions regarding the societal benefits that it captures, with recognition that wider forms of impact, influence, and engagement can, do, and should occur). Nevertheless, the idea of ‘REF impact’ steers priorities and framings of impact within research agendas. Secondly, while the REF definition of impact is general across whole assessment exercise, there is variation in interpretation across different units of assessment within REF. This means that what counts as ‘REF impact’ for scholars in one discipline may not do so (as well) for scholars in another. Insofar as research agendas are influenced (as they are) by considerations of REF, this has implications for how research will be undertaken; implications that are further complicated where the same research bridges disciplines. This is so even in contexts where other influential actors—such as the UKPRP—aim to generate their own vision and realization of impact.

With those points of introduction and context explained, the paper works through three substantive sections. We next provide an overview of our research methods. The following section presents a systematized representation of our data. And the final substantive section provides discussion of our findings, incorporating reflections on what may be learned from our analysis. We present this discussion with a view to it informing ongoing research agendas, with particular salience for research programmes that are transdisciplinary, impact-oriented, and characterized by addressing problems of significant practical complexity ([Martin 2011](#); [Penfield *et al.* 2014](#); [Schäfer, Bergmann and Theiler 2021](#);

[O’Donovan, Michalec and Moon 2022](#); [Pinar and Horne 2022](#); [Marg and Theiler 2023](#)).

2. Methods

The purpose of the interviews was to understand how different research groups funded by the UKPRP understood impact and were approaching impact planning and evaluation. We sought to interview 14 individuals: consisting of one senior academic lead and one person whose role directly related to impact planning or monitoring from each of the seven funded Consortia. In total, 13 semi-structured interviews with 15 individuals with representation from all seven funded Consortia were conducted. Four senior academic leads (e.g. Directors or Co-Directors); three managers/administrators; three strategic leads; and five members of each Consortium whose role directly related to impact planning or monitoring. Three senior academic leads were not available for interview, and so they recommended a member of their consortium to be interviewed instead (e.g. Consortium Manager and/or strategic lead). All five whose role directly related to impact planning or monitoring that were approached, were interviewed. To maintain anonymity, we do not describe interviewees in detail, nor do we assign quotes to specific research teams. We leave numbers of interviewees in to demonstrate linkage and to enable the reader to see which quotes are from the same or different interviewee. Ethical approval was granted by the University’s General Ethics Panel (Reference GUEP 6476).

Interviews were organized via direct email communication between the participants and lead author. Interviews were conducted between August and December 2022 using Zoom and lasted an average of 43 mins (range 30–77mins). Participants were provided with an information sheet and consent form which they returned prior to the interview. The interview guide ([Supplementary Material 1](#)) had 12 areas of focus: (1) impact definition, (2) impacts expected, (3) pathways to impact, (4) evaluation, (5) challenges, (6) influence of UKPRP aims/objectives, (7) feasibility, (8) wider research environment, (9) barriers, (10) stakeholder engagement and co-production, (11) Covid-19 and (12) online working.

Interviews were electronically recorded using Zoom’s record feature and professionally transcribed in full. Transcripts were subsequently anonymized to remove respondent identification and politically or commercially sensitive data. Transcriptions were coded twice, separately and by two separate primary coders, using NVivo 12. Codes were identified through concepts in the literature ([Bammer 2013](#); [Reed 2016](#)) and key research questions with the full team and revised following discussion between the two coders. Framework Analysis ([Srivastava and Thomson 2009](#)) was employed because this method lends itself well to in-depth analysis of each transcript, summarizing the data into a framework grid using NVivo 12. The wider context of participants’ accounts is therefore retained across each transcript. Within our framework grid (row = participant, column = theme) summaries of participants’ accounts were written in each relevant cell. To assist with data management each summary was hyperlinked to the transcript. Following this, high level themes were identified, and further in-depth analyses was conducted.

In the final analysis of the data, six main themes were identified: (1) defining impact; (2) programme theory & pathways to impact; (3) stakeholder analysis, engagement & co-production; (4) measuring & reporting impact; (5)

challenges, structural barriers and lessons learned; (6) funder influence.

3. Findings

3.1 Defining impact

The interview data strongly reinforces that there is considerable variation in how ‘impact’ is understood. Table 1 displays the impact definitions according to the framing in Reed (2016), which categorizes impacts into five main areas: instrumental, conceptual, capacity-building, attitudinal or cultural, and enduring connectivity. This table also shows the number of participants, by job role, that stated each kind of impact, as well as an example quote for each.

There was a very wide range of understandings of the term ‘impact’ provided by interviewees. The Table 1 categorization suggests that almost all interviewees identified changes to policy and practice (Instrumental), with many identifying Conceptual impacts, namely; Improved access to evidence and changes to public discourse. There was considerable variation beyond that however and little discernible consistency (‘shifting the way people think’ could be, arguably, either conceptual or attitudinal, or both, though we leave as conceptual as it does not change the overall point). Few interviewees identified impacts categorized as Attitudinal or Cultural and Enduring connectivity. In addition to those shown in this table, there were three additional definitions of impact given, which do not fit in this categorization: (1) academic papers, (ii) ‘*how it fits with REF*’ (P10—Strategic lead) and, more generally, (3) ‘*the good that researchers can do*’ (P3—Dedicated impact personnel).

Despite the prevalence of focus on both policy and practice, there was a clear distinction made by several interviewees between the two. There was also widespread agreement that there is no real consensus as to how researchers interpret impact within their Consortium, due in part to the range of understandings across disciplines and between academia and practice:

The way in which we define impact just is all over the place and there’s something that’s quite frustrating, but also quite lovely about that ... we’ve got some people who talk about impact as being research papers impacting the academic community. We have some people who talk about impact as being work that is co-produced with somebody ... (P10 - Strategic lead)

This plurality of definitions has clearly presented challenges, requiring considerable work and time to resolve, and revealing different characterizations and perceptions between groups:

I think there are multiple different definitions of impact within the academic world that I don’t necessarily understand ... we’re trying to get them to understand the version of impact that we’re working towards, that UKPRP are asking for ... that’s the challenging bit. It does sometimes feel like we’re talking at cross purposes ... I feel like we have to do quite a lot of bringing the academics with us on that ... (P9—Dedicated impact personnel)

As a result, a couple of Consortium managers/administrators stated that they attempted to establish a consensus within

their Consortium, but with mixed results. Despite this, they reported their group was at ease with the plurality, and the majority of senior participants clearly had experience and a nuanced understanding of the challenge, if not clear solutions: ‘When it comes to this area, which is upstream ... so there’s issues about time lags, complexity ... more factors influencing behaviour than for a simple drug, or a treatment ...’ (P1—Senior academic Lead)

3.2 Programme theory and pathways to impact

Programme theory is sometimes used interchangeably with theory of change (and pathway to impact), though they are each slightly different (Black et al. 2025—Table 2). Broadly, however, they explain how an intervention (a project, a programme, a policy, a strategy) is understood to contribute to a chain of results that produce the intended or actual impacts. Interviewees’ responses revealed a range of quite different programmes, theories, and approaches to impact planning. Understandably, given the complexity of the challenge, they pointed to considerable uncertainty as to the optimal process to be taken to achieve the desired impact. One recognized that their original plan followed a more traditional public health approach (as contrasted with the distinct, new form of research programmes initiated by the UKPRP agenda): ‘I haven’t looked at the logic model for some time. But I think the idea was ultimately ... was a bit reductionist actually ... a bit old fashioned in that sense in that sort of linear way.’ (P1—Senior academic Lead) There was also a strong indication across all participants that the expectation was to have a relatively fixed view up front for how impact will be realized, rather than co-producing the impact planning through the course of the project. For example, when discussing impact definition, one participant described their process of impact planning as ‘top-down’ and takes place only at the start of the project life cycle:

... the team was all there for the six-month development phase, but the actual final Impact Summary and Pathways Impact document would have been developed after that six-month period, but with a relatively small inner circle ... maybe two or three might have commented on them, but it wouldn’t have been big. We didn’t revisit them and have a debate about what impact means. I think it was: ‘This is our approach’. It was a bit more top down in that sense. (P8—Dedicated impact personnel)

This interviewee went on to explain that developing different impact pathways for different elements of their programme was undesirable or impractical. Some interviewees, by contrast, characterized a far more exploratory approach to impact planning based on iterative co-design with end users. This approach was echoed by another participant, who also flagged the inevitable uncertainties in future direction this resulted in. Ultimately, there appeared to be broad acknowledgement across the whole group of the challenge of trying to create meaningful change given the scale and complexity of policy-making institutions.

3.3. Stakeholder analysis, engagement and Co-Production

This theme relates to how stakeholders are identified and involved in the research. Although there was no specific question on the meaning of co-production, there was clearly a

Table 1. Categorizing 'impacts' using Reed (2016) Fast Track Impact framing.

Categories Reed (2016)	Impact definitions stated by participants	Number of participants stating each type of impact, by job role	Example quote
<i>Instrumental: e.g. actual changes in policy or practice</i>	<ul style="list-style-type: none"> • Changes to policy documents • Changes in financial expenditure 	3 × Senior Academic Leads 2 × Strategic Leads 4 × Dedicated Impact Personnel 3 × Professional Services Manager/ Administrators 1 × Strategic Lead 2 × Professional Services Manager/ Administrators	<p>'It's very much kind of evidence into policy process and ultimately policy change in government ...' P5—Professional service manager-administrator</p> <p>'by giving policymakers the tools to know how best to spend that money in order to actually improve people's health by addressing perhaps thinking about where that money's spent, how that money's spent.' P7—Strategic lead</p>
<i>Conceptual: e.g. broad new understanding/awareness-raising</i>	<ul style="list-style-type: none"> • Communications (bulletins) and media outputs • Improved access to evidence • Changes to public discourse 	1 × Senior Academic Lead 2 × Senior Academic Leads 1 × Strategic Lead 1 × Dedicated Impact Personnel 1 × Senior Academic Lead 2 × Strategic Leads 1 × Dedicated Impact Personnel 2 × Professional Services Manager/ Administrators 1 × Dedicated Impact Personnel	<p>'... we were always getting on the media and actually we could record changes in practice over time' P1—Senior Academic Lead</p> <p>'... hopefully that will help in future provide the right type of evidence at the right stage, that's the idea.' P12—Dedicated impact personnel</p> <p>'... there is lots of stuff in there around impact on public discourse.' P8—Dedicated impact personnel</p>
<i>Capacity-building: e.g. training of students or professionals, CPD</i>	<ul style="list-style-type: none"> • Submitting evidence to Parliamentary Committee hearings • Shifting the way people think • The development of knowledge and skills • Number of PhDs • Empowerment of communities • Academic career advancement and research expansion 	1 × Dedicated Impact Personnel 2 × Strategic Leads 2 × Professional Services Manager/ Administrator 1 × Senior Academic Lead 1 × Strategic Lead 1 × Dedicated Impact Personnel 2 × Professional Services Manager/ Administrators 1 × Professional Services Manager/ Administrators 1 × Senior Academic Lead 1 × Dedicated Impact Personnel	<p>'... things like submitting evidence to Parliamentary Committee hearings ...' P9—Dedicated impact personnel</p> <p>'... being able to shift the way in which ... they think about health.' P10—Strategic lead</p> <p>'... that in itself feels like an impact because its developing capacity and knowledge and skills.' P2—Professional Services Manager/Administrators</p> <p>'... increasing capacity, increasing development and skills so number of PhDs, having Masters students working with us, having work experience with people that are in our communities, those sorts of things.' P2—Professional Services Manager/Administrators</p> <p>'having a meaningful stake and role in shaping those designs and strategies ... express so there's an impact there around empowerment of [subject] and communities in designing these responses.' P4—Senior academic lead</p> <p>'if you think of it like a tree and you've got the professors at the top ... you want to get all of those mid-career researchers to become the top of another tree and then they have their own people and that is how you multiply the field basically.' P8—Dedicated impact personnel</p>

(continued)

Table 1. (continued)

Categories Reed (2016)	Impact definitions stated by participants	Number of participants stating each type of impact, by job role	Example quote
<i>Attitudinal or cultural: e.g. increased willingness to engage in new collaborations</i>	<ul style="list-style-type: none"> Trust and credibility Local leaders “<i>understanding and engaging</i>” in the research 	<p>1 × Dedicated Impact Personnel</p> <p>1 × Senior Academic Lead</p>	<p>‘... so all these—outputs and the outcomes, I guess are what you would describe as impact and they spread along. So it’s like improved access to evidence, trust and credibility.’ P8—Dedicated impact personnel</p> <p>‘I think there are some other kinds of intermediate impacts which is like leaders of local public systems, understanding and engaging in the research and evidence around the social determinants of health.’ P4—Senior academic lead</p>
<i>Enduring connectivity: e.g. follow-on interactions such as joint proposals</i>	<ul style="list-style-type: none"> The securing of ongoing research funding 	<p>2 × Senior Academic Leads</p> <p>1 × Dedicated Impact Personnel</p> <p>2 × Professional Services Manager/Administrators</p>	<p>‘obviously we’re hoping to have ... through a different funder, we’re hoping to have a sort of [Consortium name]’ P5—Professional service manager-administrator</p>

wide range of views on what it means. The dominant understanding from interviewees appeared to be around the development or maintaining of existing long-term relationships with ‘policy-makers’ or the role of researchers placed within partner or stakeholder organizations: ‘we had quite a good relationship already, we had a few members of the team that sat on the Public Health Team already’ (P2—Professional service manager-administrator). There also appeared to be a lack of understanding or experience—in at least one case—of how to work well with practitioners:

...there was some feedback that the policy partners weren’t getting as much out of it as they could have been because ... we were talking too much about [conference and publication planning] ... obviously the academic outputs like conferences, papers are important but it’s not important to the policy partners ... So we’ve basically made tweaks to changes in our governance structures, changes in format of meetings ... So I think that’s a really important point of learning. (P5—Professional service manager-administrator)

This possible lack of experience in external engagement was echoed by another interviewee who stated they were critical of the impact agenda due to a perceived lack of thought on issues such as ‘public appetite’, whether NGOs are interested, and the extent that researchers have ‘made an effort to engage and get their message out there’. (P6—Strategic lead)

On the other hand, the recognition of the importance of trust and relationships indicates experience in policy development, as well as a valuing of end user co-production in the development of programme theory, given the time it takes to achieve impact: ‘a large part of what we’re doing is just brokering those relationships so that it becomes easier and easier for that evidence to be available to the folk that need it.’ (P9—Dedicated impact personnel). In addition, there was also a recognition of the different phases of co-production over time: ‘an initial phase of very like wide early discovery where we’re just engaging very widely with diverse groups of [people and organisations] with a view then of narrowing down to create these more focused opportunity areas for a next phase of much deeper discovery and design.’ (P4—Senior academic lead)

3.4 Measuring (and reporting) impact

This theme is based primarily on the measurement (or evaluation) of impact, with reporting as a sub-theme within the broader challenge of evaluation. The majority of participants’ data concerns involved the measuring of impact, particularly over the long term due to the exponential complexity of causal pathways. The extent of the challenges at play was underlined repeatedly:

Trying to map out all those different potential impacts across all these different complex systems and from there not only over time, because we’re talking about potential ramifications over ten, twenty, fifty years, so across all these different people, the complexity is just so vast that even, we’re almost, you know, wondering just how robust and realistic that type of impact measurement can ever be (P11—Professional service manager-administrator).

Despite these acknowledged challenges, there was general support for the comprehensive logging and tracking of activity and engagement, for example the tracking of written or verbal intervention by researchers that has led to it being formally recorded or, ideally, through changes to policy documentation over time.

Yet there was also some scepticism around whether: (1) such tracking actually constitutes impact evaluation, (2) it is even measuring/tracking what is important, or (3) the evaluation is even helpful, ultimately, in enabling impact. One interviewee suggested that it is 'insane' to try and measure it, and arguably pointless (P8—Dedicated impact personnel). Another interviewee raised the risk of consultation fatigue amongst key policy-makers, and this participant underlined the challenge of measuring certain kinds of impacts, such as awareness raising:

But how do you measure that? Like how do you measure that somebody knows that [Consortium member] is the guy to go and ask about this thing? But ... for me that is just as important as having your research referenced in that policy document you know? ... part of my job that I didn't mention is effectively just saying the word ['Consortium title'] in like random meetings, partly so that people can come to me (P9—Dedicated impact personnel)

Some approaches to measurement had parallels to those taken in impact planning and co-production, in that they appeared to be relatively fixed up front, with known stakeholders who could be iteratively accessed throughout the project. Another relied on anticipation: 'there's an element of our work where we're having to kind of predict what direction policy is going to go.' (P9—Dedicated impact personnel). Others demonstrated use of systems approaches, as well as phased and evolving evaluation design based less on tracking and more on qualitative *post hoc* assessment. Another two made clear that they saw their research design developing in phases, and the evaluation evolving within that:

... it's still in the sort of conceptual phase but it's probably going to be more about qualitative interview-based type approaches with key stakeholders and experts to understand their views of how, you know, the impact might ripple out. It's early stages but we will be developing quite, hopefully sophisticated approach to impact measurement going forward. (P11—Professional service manager-administrator)

Alongside the acknowledged challenge of impact measurement, there was the acknowledgement that evaluation approaches could be or needed to be improved, as well as better resourced:

We don't have any work package in [this Consortium] that is about measuring or monitoring our impact. Even our Pathways to Impact is like a pretty small—I think our budget is £[X], but that includes all our comms and our design and everything, for all of our impact work. So, it's pretty tiny ... (P8—Dedicated impact personnel)

3.5 Challenges and structural barriers to achieving impact, and lessons learned

This theme relates to the issues researchers faced while striving to achieve or demonstrate impact, within which wider

system (structural, institutional) barriers were a main consideration. In addition to the acknowledged challenge of measuring impact, several of the interviewees explained that the research was very different to previous research approaches, and specifically in terms of stakeholder co-production: 'there are very few projects I've worked in where you're working so closely alongside decision-makers (and that it) is probably the most innovative and bold project I've ever worked with' (P7—Strategic lead). The need for time and resource surfaced again and again in different guises, both for the partners (especially public sector) as well as the research group. There was also the reported challenge of operationalizing large research groups in new ways:

it's a large team, it's a large grant, lots of different work-streams and strands of activity ... part of the challenge is ensuring that all of the work and activity that's taking place is aligned towards our overarching impact goals ... I think they could very easily separately spin off in different directions and lose some of their coordinated impact if we weren't careful (P4—Senior academic lead)

There were also specific challenge areas, such as measuring the impact of the communications and distinguishing it with the impact from the evidence. Some teams were described as having good in-house capacity in some areas, such as design and impact planning with established partners. One flagged they have a quarterly Impact Group made up of their main partners who are 'obviously a big part of our impact infrastructure as well' (P8—Dedicated impact personnel). Another said they were 'quite fortunate to have good like design skills and expertise in our team' with 'beautifully designed interactive Miro boards' (P4—Senior academic lead). However, these sorts of points were not universal across interviewees, indicating a potential lack of those skills or resource in some Consortia.

A further challenge related to staff turnover, which was especially problematic for one Consortium and specifically for the public organization they were partnering with. Linked to staff turnover were issues of recruitment, notably of the researchers supporting co-production and whether their skill-set fit the role envisaged: '... they haven't been as good at giving us the kind of policy overview, insights ... so we then have set up additional supplementary meetings with policy partner people' (P6—Strategic lead).

Beyond issues of resourcing and time, the main challenges identified are broader, more structural or institutional. There was a clear awareness of the inherent risks of undertaking research of the nature and scope fostered by the UKPRP: 'I think it's all feasible, it's just slow and takes a lot of work and is complex and it's not easy straight-line stuff because of the political and all the other stuff ... there'll be higher failure rates' (P1—Senior academic Lead). There was also a clear understanding of the added value of going beyond the traditional approaches that are 'concrete, deterministic, reductionist', but a worry too 'whether they'll be able to keep funding going in this sort of area give how difficult it will be' (Senior academic Lead). Another part of the structural challenge is how performance is measured. Responses included an acceptance of the *quid pro quo* exchange between funder and recipient: 'One of our big selling points to the funder was that we would bring in more funding than they gave us, and we've done that' (P8—Dedicated impact personnel).

The question on the REF elicited various indications of its imposing constraints and limitations, particularly in terms of encouraging new ways of doing research: ‘REF I think is ... very much working with current policy trajectories ... we need that, but we also need research that is thinking about bigger issues’ (P6—Strategic lead). Others, in reference to REF, spoke about how emotive discussions on impact could be: ‘... when you said impact, people would sort of rile a bit at that, because they’d be like, do you mean impact like real impact, or do you mean impact like universities define it, as in REF? There would be a little bit of defensive eye-rolling about how REF is rubbish. [...]’ (P8—Dedicated impact personnel).

As another interviewee describes, not only is it unclear when to try and measure the potential impact of one’s research, but due to matters that are completely out of one’s control, the intended outcomes may never materialize, or at least in a way that is measurable. Notably, this was framed around issues of fairness. There was a criticism that the structural features of the research environment benefit particular disciplines, such as health sciences, due to the metrics used being more suited to that area. There was also a concern raised about a potential lack of innovation where there are long-established relationships between policy-makers and academia: ‘... if you haven’t got [the Consortium] at the forefront of people’s minds ... they won’t necessarily think about the teams outside of the ones they have a really good relationship with ...’ (P9—Dedicated impact personnel).

3.6 Funder influence

This relates to the significant effect a funder can have on the research agenda. Almost all participants supported the UKPRP’s vision, ambition and willingness to do things differently, describing it as ‘an important step forward’ (P1—Senior academic Lead). Despite many agreeing and already aligning with the UKPRP’s broad vision of impact, there were a few elements that the researchers had to adapt to in terms of their impact framework. For many participants one new, attractive element was in taking a systems approach: ‘Where it would have shaped us would be making sure that we had ... an actual work package that looked at systems’ (P8—Dedicated impact personnel).

Those with a background in what might be framed—against the UKPRP’s transformative agenda—as ‘traditional’ public health research, implied this was more of a radical change, whereas researchers from (some, at least) other disciplines were apparently more used to this. One describes how a systems approach to research was really appealing: ‘it was a broad approach, looking at society as being a complex and interlinked system ... that absolutely fits with the focus that drew us’ (P13—Senior academic Lead).

Another aspect in which the UKPRP’s aims have influenced how the participants conduct their research is by encouraging collaboration between disciplines, which was argued to have improved the quality of research in this field:

The other thing it did was promote collaboration; I mean interdisciplinary collaboration. So I think the UKPRP thing at least for us as had an impact on people working together who have never really worked together in health before ... it promotes more interdisciplinarity and I think it’s raised the quality of Public Health Research (P1—Senior academic Lead).

4. Discussion

As contextualized in the introduction of this paper, our interview data have provided perspectives from researchers within the agenda established through the UKPRP: ie seeking to enable new forms of research that are distinct from ‘traditional’ public health research. In particular, that distinction comes through their being widely transdisciplinary, impact-oriented, and co-produced with complex networks of academic and non-academic stakeholders. We have sought to generate understanding of how ‘impact’ within this research agenda has been both conceived and approached across the funded Consortia.

On the one hand, latest best practice in transdisciplinary research underlines the inevitability and—when done well—desirability of this plurality of meanings, for it is within this liminal space that new understandings can be found, if different understandings are clearly articulated and understood (Bammer 2013; Vienni-baptista 2022). Without clear articulation, however, there is a significant risk and even likelihood that a lack, or diminution, of shared understanding will be prevalent. Differences in understanding, while inevitable up to a point, can lead if unaddressed to divergent missions and incoherence: even with valid pluralism, clarity is still needed to help navigate the complexity. The interview responses presented here show how different people both conceptualize and communicate these understandings differently. For example, some describe it as a material change (e.g. a specific change in policy) while others see it as a process (e.g. the development of knowledge) and others as a change in state (e.g. improved access to evidence). One way we have used to clarify these different categorizations is by comparing across several different impact frameworks, including the Hierarchy of Research Impact (Black, Charlesworth et al. 2023a—Table 4; Stryer et al. 2000).

On how different groups have approached the development of programme theory and pathways to impact, there was one main and notable tension. On the one hand, most teams appeared to be following a more traditional model of research design, with detailed plans set up front, and with the expectation that funders will require traditional outputs and measures. There appeared to be a relatively widely shared notion that developing theories of change is a static exercise and not iteratively co-produced. For example: ‘we did try to have a different Theory of Change for each work package at one point and then that just became impossible’ (P8—Dedicated impact personnel). Yet on the other hand there had also been an explicit call from the funders for new approaches that were transdisciplinary and grounded in systems thinking and end user co-production (The UK Prevention Research Partnership 2017). This points to different understandings of the effective operationalization of these key areas (of systems science, transdisciplinary working and approaches to co-production in relation to societal impact planning) (Bammer 2013; Vienni-Baptista, Fletcher and Lyall 2023). Yet, as above, this should not be overstated, as all research proceeds in phases and there are times when a more traditional model is appropriate. For example, it may be that the project has already innovated, is now established, and so is building on substantial prior co-production activities and detailed understandings of impact pathways. In other words, it may be justifiably focused on later-stage delivery and implementation rather than exploratory early problem identification and

pathway development. This points to the need perhaps for greater clarity on what stage of the research development life-cycle proposals are at (Black *et al.* 2023b), the need for clarity on how to characterize that given the diversity across the different groups, and how to structure the team accordingly. It points to the need for leadership on these issues at a higher than departmental level, which perhaps could inform the development of programme theory and impact pathways as well as linked research funding calls and their design. It also may indicate a need for funders to be more explicit about what they expect from the co-production, or whether they are looking to support both delivery phase as well as exploratory phase projects. This has significant implications for funder and researcher expectations on, for example, volume and timing of outputs, given that this varies considerably across these phases (ie establishing new projects and teams tend to require more time and resource for coordination and adjustment, while delivery phases result in greater outputs on findings). That does not automatically imply that latter stages are more desirable necessarily. For there is, arguably, far more scope for the innovation (the ‘new approaches’ being called for) in the earlier developmental phases (Black *et al.* 2023b; Skivington *et al.* 2021).

The responses given under the theme of stakeholder analysis, engagement and co-production suggest too a relatively traditional approach to research: i.e. that understandings of the problem space were relatively fixed at the start, based on prior networks and prior research, and with the research design predicated on known system boundaries (Bammer 2013; Norris *et al.* 2016; Lawrence and Gatzweiler 2017). This is again understandable given the need for funders and reviewers to have reassurance up front of what the researchers are proposing to do and what they will achieve. However, as with the above, it presents challenges that lie in tension with the stated need for co-production and, arguably, ‘new approaches to population health research’ that ‘go beyond the traditional’ (The UK Prevention Research Partnership 2017). An interesting point for reflection is the evolving role of the researchers (or researcher-practitioners) supporting co-production that are either embedded in partner organizations such as local authorities or otherwise acting as knowledge broker. On the one hand they clearly provide opportunities for very substantial engagement with end user partners and have significant influence within their sphere of operation. On the other hand, that sphere may be relatively fixed from the start and unable to shift as easily to accommodate new learnings and engage new sectors or stakeholder communities identified through snow-balling and co-production. In other words, the pathway to impact is necessarily constrained and to be found only through that fixed localized engagement, rather than through a flexible, more agile engagement. This speaks again to the different phases of the research and associated challenges. The atomized nature of academic ‘overspecialization’ (Casadevall and Fang 2014) combined with rapidly evolving needs of practitioners and partners creates a significant challenge in operationalizing a more flexible approach (Black *et al.* 2023b).

A second point of note on the topic of stakeholder analysis, engagement and co-production is the lack of detail presented in the responses to questions on stakeholder analysis, specifically: *ie who’s in and why?* (Reed *et al.* 2009). This may be due to the manner of our line of questioning in the interviews, but given the responses and the latest best practice presented

above, it would seem more likely that there is a gap in understanding around this critical area (Balane *et al.* 2020). The latest MRC/NIHR guidelines on the development and evaluation of complex intervention have, rightly in our view, ‘consideration of context’ as of paramount importance (Skivington *et al.* 2021). This arguably too gentle phrase belies the complexity of the undertaking. Bammer (2013) underlines the critical importance of understanding the problem space, but as above, this is easier said than done (Black *et al.* 2023b). When intervening in highly complex systems of systems (Gardner 2016; Black *et al.* 2021a), where the root cause problem(s) are yet to be identified (Black *et al.* 2021b), and there is a wide range of views across scores of academic disciplines and hundreds of external stakeholder representatives, the importance of stakeholder analysis becomes paramount. It is critical not only for understanding the problem, but also for mapping pathways to impact. That is not to say there are not major challenges in doing it effectively, and also counter-arguments against stakeholder identification that is inevitably only partially informed (Louise and Annette 2019; Williams *et al.* 2020; Durose, Perry and Richardson 2022). However, the notable point here is that, for such a critical area in impact planning, it is notably absent.

The resounding message on the theme of impact evaluation was that it is extremely challenging, if not apparently insurmountable in many ways. The innumerable variables and changes over time render traditional methods of evaluation obsolete. There are currently interesting initiatives emerging, for example the Systems Evaluation Network, in methods such as Ripple Effect Mapping (Chazdon *et al.* 2017). This work appears to focus predominantly on more manageable, though still highly complex areas, such as local authority physical activity interventions (Nobles *et al.* 2022). Alongside these there are complicated systems models available and being developed, often quantitative and still relatively reductionist, such as Agent Based Modelling and Dynamic Stock-Flow or Causal Loop models (El-Sayed and Galea 2017). However, one cannot help but wonder if these approaches are falling foul of the same challenges that have faced economists for decades on the quantification of social and environmental outcomes (Hardin 1968; Meadows 1972)—ie the quote often attributed to Albert Einstein: ‘Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted.’ In short, the data from our interviews accord with a wider view that new, or anyway distinct, approaches are needed in health of the public research that is advanced through complex systems evaluation. Such approaches may not use historically-favoured methods and may better need to factor in both unintended consequences and future impacts.

On challenges, structural barriers and lessons learned, there was clear consensus on the need for time and resource (skills as well capacity) to develop these new ways of working, e.g. ‘I think it’s all feasible, it’s just slow and takes a lot of work and is complex and it’s not easy straight-line stuff ... there’ll be higher failure rates’ (P1—Senior academic Lead). Some of it related to COVID-19 and the pressures on local government, which made engagement very challenging for some teams. Yet these were by no means the only challenges. Many others were to do with core operational skills and the time available for those activities made all the more complex due to the nature of these new ways of working across newly forming groups of researchers: e.g. complex project

management and supervision, recruitment challenges and high staff turnover, communications strategy, analytics and delivery, or data visualization. There was clear recognition too of the wider institutional and structural barriers, not just the constraints of REF, but also issues to do with expectations, flexibility and what actually constitutes innovation and ‘impact’ (Bammer 2013; Black et al. 2023).

All that said, despite all these variable challenge areas and the plurality of understandings, there was also a resounding appreciation for the funders’ vision and ambition: the focus on upstream intervention, on co-production with those outside of academia, the acknowledgement of complexity, and the need for new approaches rooted in systems thinking and supported by systems navigators.

In terms of limitations, given the clear diversity of understandings across the group, individuals not included in this study may have described the intended impact of their Consortium differently. Secondly, careful consideration is required when interpreting these findings as participants may hold different understandings of the totality of what impact means for prevention research or research more generally rather than different emphases on aspects of impact in their Consortium. In addition, those carrying out the data collection and analysis were all part of the Community of Practice, which may have influenced both participant response, as well as analysis and reporting: the participants were interviewed by the UKPRP Community of Practice Research Fellow, who is line managed by a member of one of the funded Consortia, and the other two authors are part of another funded Consortia. Despite these limitations, however, we believe the findings provide a useful and relatively comprehensive preliminary insight into an important, yet under-investigated subject area, which may be vitally important if research is to achieve its stated mission in addressing complex societal problems. Further investigation is recommended, with increased resource and an expanded sample, and with a particular focus needed on both the challenge of impact measurement alongside the better documented, but still relatively new challenge of research operationalization (e.g. shared understandings of language and mission).

5. Implications for research policy and practice

This study, points to a number of interesting potential implications for policy and practice:

- 1) *Language, shared understanding and missions*: Given the wide-ranging plurality of definitions in terminology, there appears to be a need for much greater consistency of language and understandings across those working in the prevention agenda in order, not least, to ensure clarity of critical shared missions and objectives (e.g. (Mazzucato 2017; Vienni-Baptista, Fletcher and Lyall 2023) (The same might well apply to many or all other areas of research, especially where societal impact is a primary objective.)
- 2) *Effective co-production and validating theories of change*: There appears to be a need for researchers to be much more familiar with (a) how to develop robust theories of change, and—alongside this—(b) for funders to be more explicit about what they expect from co-production (especially in terms of stakeholder analysis and involvement) (e.g. Claus and Belcher 2020).

Validation of the former depends on effective and comprehensive co-production (including robust stakeholder identification) in order to ensure a high degree of contextual understanding across the complex systems in question (e.g. Black et al. 2025).

- 3) *Training in new approaches to research design*: While there was a range of approaches taken, there was a notable difference in many instances between the stated requirements of the funder in terms of research design approach (e.g. systems thinking, societal impact focus, transdisciplinary working) and the apparent majority of more traditional approaches taken overall (Bammer 2013, 2025). This is unsurprising given the relative novelty of the research agenda, but suggests nonetheless a programme of training may be needed in these new approaches to research operationalization across the prevention research community.
- 4) *Development of new approaches to evaluation*: Evaluation of impact across ‘systems of systems’ is clearly highly complex and still in its infancy in prevention research. It requires far greater attention with significant support likely needed from funders to enable this to happen. For example, it may be that entirely different approaches are needed (e.g. Wülser 2020; Kny et al. 2023) which draw on existing data available, but aren’t seeking in vain to map every variable, but instead look to develop different approaches to decision-making (in order to help prioritize ill-health prevention).
- 5) *Properly resourced transdisciplinarity and co-production*: The need for additional time and professional service skills (e.g. communications, design) was raised repeatedly, and is a common recommendation in the transdisciplinary research literature (e.g. Black et al. 2023b). Where many disciplines are expected to work closely together *and* interact with a wide range of stakeholders, more sophisticated communications and greater amount of time will inevitably be required. This requires recognition both from funders and senior research leads unfamiliar with these new approaches.
- 6) *Support for this new research agenda*: Despite the considerable challenges, there was nonetheless resounding support for this research agenda and programme. It did not seem these were for self-serving reasons (e.g. simply wanting more funding), but rather that there was a clear recognition that this is an important area of research that requires much greater attention. In other words, there appears both a clear need and demand to focus not just on societal impacts that result from transdisciplinary mission-oriented research, but also on the scientific impact that this kind of research can bring in terms of how to operationalize this kind of research most effectively.

6. Conclusion

This paper investigated the UKPRP’s reorientation of impact-directed public health research. In an explorative approach, we conducted a qualitative interview study with members of their funded research groups. The results show that: there is still a wide-ranging plurality of understandings when it comes to impact and how to achieve it; there is potentially a need for funders to be more explicit about what they expect from co-production and what phase of the project they are looking

to support; the role of researchers supporting co-production can be hugely valuable, but may also constrain problem identification and impact pathways; and the importance of stakeholder analysis for not only understanding the problem, but also for mapping pathways to impact. We also highlight some challenges associated with this new type of approach and barriers that prevent potential outcomes. These aspects should also be considered in future studies and in research practice.

An empirically-informed view of the UKPRP's new way of working, such as we have provided here, should, we hope, contribute significantly to the academic recognition of this area and help to increase the motivation of researchers to innovate and engage in well-thought out novel processes in relation to achieving impact: ie to harnessing new knowledge and understanding, and with that making the world a healthier, fairer place. There was considerable gratitude evident towards the funders for their approach, which deserves further exploration and evaluation. For the future, we see a need for further research on how researchers, and other engaged parties—including organizations that fund, monitor, support, and review research—understand impact and how they plan, record, and evaluate it.

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Supplementary data

Supplementary data are available at *Research Evaluation Journal* online.

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References

- Balane, M. A. et al. (2020) 'Enhancing the Use of Stakeholder Analysis for Policy Implementation Research: Towards a Novel Framing and Operationalised Measures', *BMJ Global Health*, 5: 1–12. <https://doi.org/10.1136/bmjgh-2020-002661>
- Bammer, G. (2013). *Disciplining Interdisciplinarity: Integration and Implementation Sciences for Researching Complex Real-World Problems*. Canberra: ANU E Press.
- Bammer, G. (2025). 'Integration and Implementation Insights'. <https://i2insights.org/>, accessed 2 May 2025.
- Black, Daniel. et al. (2021a) 'Overcoming Systemic Barriers Preventing Healthy Urban Development in the UK: Main Findings From Interviewing Senior Decision-Makers During a 3-Year Planetary Health Pilot', *Journal of Urban Health*, 98: 415–27. New York: Springer US.
- Black, Daniel. et al. (2021b) 'Tackling Root Causes Upstream of Unhealthy Urban Development (TRUUD): Protocol of a Five-Year Prevention Research Consortium', *Wellcome Open Research*, 6: 30. <https://doi.org/10.12688/wellcomeopenres.16382.1>
- Black, Daniel. et al. (2023a) 'Comparing Societal Impact Planning and Evaluation Approaches across Four Urban Living Labs (in Food-Energy-Water Systems)', *Sustainability*, 15: 5387. <https://doi.org/10.3390/su15065387>
- Black, Daniel. et al. (2023b) 'Operationalising a Large Research Programme Tackling Complex Urban and Planetary Health Problems: A Case Study Approach to Critical Reflections', *Sustainability Science*, BMC. 18 2373–89. <https://doi.org/10.1007/s11625-023-01344-x>
- Black, Daniel et al. (2025) 'What is "Good" Co-Production in the Context of Planetary Health Research, and How is It Enabled?', *Earth System Governance*, 23: 100229. <https://doi.org/https://doi.org/10.1016/j.esg.2024.100229>
- British Academy. (2016) 'Chapter 1: Research Universities: How Incentives are Structured Against IDR', in D. Soskice et al. (eds) *Crossing Paths: Interdisciplinary Institutions, Careers, Education and Applications*, pp. 106. The British Academy, Carlton House Terrace London: Soapbox. <https://www.thebritishacademy.ac.uk/documents/213/crossing-paths.pdf>
- Casadevall, A., and Fang, F. C. (2014) 'Specialized Science', *Infection and Immunity*, 82: 1355–60. <https://doi.org/10.1128/iai.01530-13>
- Chazdon, S. et al. (2017). A Field Guide to Ripple Effects Mapping. Retrieved from the University Digital Conservancy. <https://hdl.handle.net/11299/190639>
- Claus, R., and Belcher, B. (2020) 'Theory of Change'. Zenodo. <https://doi.org/10.5281/zenodo.3717451>
- Durose, C., Perry, B., and Richardson, L. (2022) 'Is co-Production a "Good" Concept? Three Responses', *Futures*, 142: 102999. <https://doi.org/10.1016/j.futures.2022.102999>
- El-Sayed, A. M., and Galea, S. (2017) *Systems Science and Population Health*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780190492397.001.0001>
- Funtowicz, S. O., and Ravetz, J. R. (1993) 'Science for the Post-Normal Age', *Futures*, 25: 739–55.
- Gardner, G. (2016) 'The City: A System of Systems'. *State of the World: Can a City Be Sustainable?*, pp. 27–44. Washington, DC: Island Press/Center for Resource Economics. https://doi.org/10.5822/978-1-61091-756-8_3
- Grant, J. (2015) 'The Nature, Scale and Beneficiaries of Research Impact: An Initial Analysis of Research Excellence Framework (REF) 2014 Impact Case Studies'.
- Hall, K. L. et al. (2012) 'A Four-Phase Model of Transdisciplinary Team-Based Research: Goals, Team Processes, and Strategies', *Translational Behavioral Medicine*, 2: 415–30.
- Hardin, G. J. (1968) 'The Tragedy of the Commons', *Science*, 162: 1243–8.
- Kny, J. et al. (2023) 'Assessing Societal Effects: Lessons From Evaluation Approaches in Transdisciplinary Research Fields', *GAIA—Ecological Perspectives for Science and Society*, 32: 178–85. <https://doi.org/10.14512/gaia.32.1.17>

- Lawrence, R. J., and Gatzweiler, F. W. (2017) 'Wanted: A Transdisciplinary Knowledge Domain for Urban Health', *Journal of Urban Health*, 94: 592–6. <https://doi.org/10.1007/s11524-017-0182-x>
- Louise, L., and Annette, B. (2019) 'Drawing Straight Lines Along Blurred Boundaries: Qualitative Research, Patient and Public Involvement in Medical Research, Co-Production and Co-Design', *Evidence & Policy*, 15: 409–21.
- Marg, O., and Theiler, L. (2023) 'Effects of Transdisciplinary Research on Scientific Knowledge and Reflexivity', *Research Evaluation*, 32: 635–47. <https://doi.org/10.1093/reseval/rvad033>
- Martin, B. R. (2011) 'The Research Excellence Framework and the "Impact Agenda": Are we Creating a Frankenstein Monster?', *Research Evaluation*, 20: 247–54. <https://doi.org/10.3152/095820211X13118583635693>
- Mazzucato, M. (2017) 'Mission-Oriented Innovation Policy', *UCL Institute for Innovation and Public Purpose*, September: 39.
- Meadows, D. H. (1972). *The Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind*. London: Pan.
- Moore, G. F. et al. (2019) 'From Complex Social Interventions to Interventions in Complex Social Systems: Future Directions and Unresolved Questions for Intervention Development and Evaluation', *Evaluation*, 25: 23–45. <https://doi.org/10.1177/1356389018803219>
- Nobles, James. et al. (2022) 'Ripple Effects Mapping: Capturing the Wider Impacts of Systems Change Efforts in Public Health', *BMC Medical Research Methodology*, 22: 72.
- Norris, P. E. et al. (2016) 'Managing the Wicked Problem of Transdisciplinary Team Formation in Socio-Ecological Systems', *Landscape and Urban Planning*, 154: 115–22. <https://doi.org/10.1016/j.landurbplan.2016.01.008>
- O'Donovan, C., Michalec, A. O., and Moon, J. R. (2022) 'Capabilities for Transdisciplinary Research', *Research Evaluation*, 31: 145–58. <https://doi.org/10.1093/reseval/rwab038>
- Penfield, T. et al. (2014) 'Assessment, Evaluations, and Definitions of Research Impact: A Review', *Research Evaluation*, 23: 21–32. <https://doi.org/10.1093/reseval/rvt021>
- Pinar, M., and Horne, T. J. (2022) 'Assessing Research Excellence: Evaluating the Research Excellence Framework', *Research Evaluation*, 31: 173–87. <https://doi.org/10.1093/reseval/rwab042>
- Reed, M. S. (2016). *The Research Impact Handbook. The Research Impact Handbook*. Huntly: Fast Track Impact.
- Reed, Mark S. et al. (2009) 'Who's in and Why? A Typology of Stakeholder Analysis Methods for Natural Resource Management', *Journal of Environmental Management*, 90: 1933–49. <https://doi.org/10.1016/j.jenvman.2009.01.001>
- Research Excellence Framework. (2024) 'Research Excellence Framework—What is the REF?'. <https://www.ref.ac.uk/about/what-is-the-ref/>, accessed 6 May 2025.
- Schäfer, M., Bergmann, M., and Theiler, L. (2021) 'Systematizing Societal Effects of Transdisciplinary Research', *Research Evaluation*, 30: 484–99.
- Skivington, Kathryn. et al. (2021) 'A New Framework for Developing and Evaluating Complex Interventions: Update of Medical Research Council Guidance', *The BMJ*, 374: n2061. <https://doi.org/10.1136/bmj.n2061>
- Srivastava, A., and Thomson, S. B. (2009) 'Framework Analysis: A Qualitative Methodology for Applied Policy Research', *Journal of Administration and Governance* 72 (2009), Available at SSRN: <https://ssrn.com/abstract=2760705>
- Stern, N. (2016) 'Building on Success and Learning from Experience. An Independent Review of the Research Excellence Framework.', July: 56.
- Stevenson, C. (2023) *Data Enhancement and Analysis of the REF 2021 Impact Case Studies*. <https://doi.org/10.7249/rra2162-1>.
- Stryer, D. et al. (2000) 'The Outcomes of Outcomes and Effectiveness Research: Impacts and Lessons from the First Decade', *Health Services Research*, 35: 977–93.
- Syme, S. L. (2008) 'The Science of Team Science: Assessing the Value of Transdisciplinary Research', *American Journal of Preventive Medicine*, 35: S94–5. <https://doi.org/https://doi.org/10.1016/j.amepre.2008.05.017>
- The UK Prevention Research Partnership. (2017) *The UK Prevention Research Partnership (UKPRP): Vision, Objectives and Rationale*. <https://mrc.ukri.org/documents/pdf/ukprp-background-and-rationale/>, accessed 6 May 2025.
- The UK Prevention Research Partnership. (2018) *UKPRP Impact and Evaluation Framework*. <https://ukprp.org/wp-content/uploads/2019/09/117669-UKPRP-UKPRP-Framework-Monitor-and-Evaluate-Bk-Proof-Sep-2nd.pdf>, accessed 6 May 2025.
- UK Prevention Research Partnership. (2019) 'Joint action for a healthier, fairer future'. <https://ukprp.org/>, accessed 30 Jan. 2024.
- UK Research and Innovation. (2024) 'Co-production in research'. <https://www.ukri.org/manage-your-award/good-research-resource-hub/research-co-production/#:~:text=Co-production often includes academic, ethics around their joint research>, accessed 30 Jan. 2024.
- Vienni-Baptista, B., Fletcher, I., and Lyall, C. (2023) *Foundations of Interdisciplinary and Transdisciplinary Research: A Reader*. Bristol, England: Bristol University Press.
- Vienni-baptista, B., (2022) 'Embracing Heterogeneity: Why Plural Understandings Strengthen Interdisciplinarity and Transdisciplinarity', *Science and Public Policy*, 49: 865–77.
- Williams, Oli. et al. (2020) 'Lost in the Shadows: Reflections on the Dark Side of co-Production', *Health Research Policy and Systems*, 18: 43–10. <https://doi.org/10.1186/s12961-020-00558-0>
- Wülser, G. (2020) 'Most Significant Change'. Zenodo. <https://doi.org/10.5281/zenodo.3717069>