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Value dissonance in research(er) assessment: individual and perceived institutional priorities in review, promotion, and tenure

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There are currently broad moves to reform research assessment, especially to better incentivize open and responsible research and avoid problematic use of inappropriate quantitative indicators. This study adds to the evidence base for such decision-making by investigating researcher perceptions of current processes of research assessment in institutional review, promotion, and tenure processes. Analysis of an international survey of 198 respondents reveals a disjunct between personal beliefs and perceived institutional priorities ('value dissonance'), with practices of open and responsible research, as well as 'research citizenship' comparatively poorly valued by institutions at present. Our findings hence support current moves to reform research assessment. But we also add crucial nuance to the debate by discussing the relative weighting of open and responsible practices and suggesting that fostering research citizenship activities like collegiality and mentorship may be an important way to rebalance criteria towards environments, which better foster quality, openness, and responsibility.

Keywords: research assessment; academic careers; research metrics; open research.

1. Introduction

Academia is often termed a 'prestige economy' (Blackmore and Kandiko 2011) to acknowledge that the complex motivations for academic work are better typified by socio-cultural factors related to the pursuit of recognition for intellectual leadership than other factors such as monetary gain. In the model of the 'cycle of scientific credibility' suggested by Latour and Woolgar (2013), gains in prestige are translated into new resources via project grants or institutional promotion, which are then used to conduct new research, whereby more prestige (often counted via citations or the associated relative prestige of the venue where the research was published) can be accumulated. Within this cycle, promotion and hiring procedures within institutions are key factors in shaping success (along with others like grant evaluation processes and publication decisions).

Criteria for review, promotion and tenure (RPT) usually centre around three pillars: research, teaching, and service. Although the weights given to these elements vary over types of institutions and have changed over time (Youn and Price 2009; Gardner and Veliz 2014), currently, research performance is usually the most important element (Schimanski and Alperin 2018).

The ways in which RPT processes value research are currently under great scrutiny. Growing concerns over the last decade over misuse of metrics (DORA 2012; Hicks et al. 2015; Wilsdon et al. 2015) and perceived lack of support for practices supporting openness and responsibility in research (Schimanski and Alperin 2018; Moher et al. 2020; Alperin et al. 2022; Pontika 2022a) are translating into concerted change. The *2012 San Francisco Declaration on Research Assessment* (DORA) now has more than 22,000 signatories (individuals and organizations) in 159 countries, and reform of research assessment appears as a key priority in key policy documents from United Nations Educational, Scientific and Cultural Organization (UNESCO) (UNESCO 2021), European University Association (EUA 2022), Science Europe (Science Europe 2022), Latin American Council of Social Sciences (CLACSO-FOLEC 2022), and many others. In 2022, following a European Commission–led initiative to build a 'coalition of the willing' (European Commission 2022), the Coalition for Advancing Research Assessment (COARA) was launched. Underpinned by an agreement document setting out shared principles, commitments, and timeframes (COARA 2022), as of late 2022, COARA already included almost 400 signatory organizations.

This study investigates researcher perceptions of current processes of research assessment in RPT processes, including regarding quantitative versus qualitative assessment, recognition of open and responsible practices, and the role of 'research citizenship' activities. We next explain each of these areas.

1.1 Quality versus quantity

There is growing consensus that the 'metric tide' of over-quantification has become a too dominant factor in research assessment, especially with misuse of metrics like the number of publications (Walker et al. 2010; Pontika et al. 2022a) or journal-level metrics like the Journal Impact Factor (JIF) (McKiernan et al. 2019; Yeh et al. 2022; Pontika et al. 2022a). In his essay 'Living with the H-Index', Burrows (2012) suggests that an 'audit culture' fosters increasing use of metrics, which then take on a life of their own to 'increasingly function autonomously as a data assemblage' that enacts market processes such that 'academic values are becoming transformed'.

For Müller and de Rijcke (2017), as measures become targets, scholars learn to 'think with indicators' such that gaming and strategic behaviours become routine and 'indicators are no longer one way among others of attributing worth, but the dominant way, that is cancelling out other possibilities of how worth could be attributed'. Through field work with life scientists, Müller and de Rijcke showed that quantitative indicators like the JIF have become 'epistemic agents that shape the "how", the "what", and ultimately the "why" of research', influencing decisions not only of evaluation but also about where to publish and even what research to pursue in the first place.

Such focus on quantification, at the expense of qualitative measures, has been much criticized, with the San Francisco DORA being a key touchstone for the recognition of the especially pernicious role of the JIF (DORA 2012), a journal-level metric of average citations originally intended to assist library journal subscription decisions that have since been used heavily as a proxy for relative importance of not only journals but also individual pieces of research published within (Adler, Ewing, and Taylor 2009; Walker et al. 2010). Clarion calls including the Leiden Manifesto (Hicks et al. 2015) and Metric Tide report (Wilsdon et al. 2015) further warned of danger of over-quantification.

1.2 Open and responsible research

Open Science (the "movement to make scientific research, data and dissemination accessible to all levels of an inquiring society," per Pontika et al. 2015) and Responsible Research and Innovation (RRI, understood as a broader concept incorporating OS along with science education, public engagement, governance, gender, and ethics to align scientific outcomes with the values of society) have been adopted as key ambitions of research funding and performing organizations (Directorate-General for Research and Innovation (Ed.) 2016; Owen, Macnaghten, and Stilgoe 2012). The barriers and drivers in making research practices more open and responsible are diverse, from building awareness to adequate access to infrastructure and training (Cox and Obloj 2015; McKiernan et al. 2016). However, as stated earlier, despite often highly valuing open (Scheliga and Friesike 2014; Ross-Hellauer, Deppe and Schmidt 2017; Pardo Martínez and Poveda 2018; Abele-Brehm et al. 2019) and responsible (Bührer and Wroblewski 2019; Carrier and Gartzlaff 2020; Kuzma and Cummings 2021) practices in the abstract, researchers often remain reluctant to participate in such practices, and it is now recognized that current research assessment processes are major barriers to uptake (UNESCO 2021; COARA 2022; EUA 2022). Bührer and Wroblewski (2019) found that 'researchers

working in an institutional environment that systematically supports the practice of RRI are more active in RRI practices'. Köster et al. (2021) explain such dynamics as deriving from a mismatch between *injunctive* and *descriptive* norms. Descriptive norms are 'what most others do', and they contrast with injunctive norms, 'what most others approve or disapprove' (Cialdini, Reno, and Kallgren 1990). The issue is that although injunctive norms of openness and responsibility can be said to be quite developed (people think that they are generally a good idea), researchers who may espouse these ideals are nonetheless confronted by a descriptively normative world in which far fewer people actually participate and in fact seem disincentivized to do so by presiding norms of hypercompetition, 'publish or perish', and self-interest.

Since, when faced with a clash between injunctive and descriptive norms, people's behaviours tend to follow the latter (Farrow, Grolleau, and Ibanez 2017), increasing uptake of open and responsible practices faces somewhat of a 'collective action problem' (Olson 1971). Köster et al. (2021) suggest that a key answer is to alter behaviours through revised incentive structures that bring goals of openness and self-interest into alignment.

Currently, non-traditional outputs such as data, scientific software, or specific mentions of Open Access (OA) publications feature only infrequently in RPT documents (Alperin et al. 2019, 2022; Rice et al. 2020, 2021; Pontika et al. 2022a). Further alternative criteria, such as engagement with the public, policymakers, or industry, are more common, but somewhat confined to specific national contexts (Pontika et al. 2022a).

1.3 Research citizenship

We can also identify a set of 'service activities' which relate directly to research activities. 'Academic citizenship' is a broad concept covering 'different interpretations of the civic purposes of the university', which are 'largely under-conceptualized and poorly rewarded in academic life' (Macfarlane 2007). We here define academic citizenship, with Edward Shils, as a 'duty to the university and the academic world as a loyal and responsible academic citizen' (Shils 1997). Since we are here concerned specifically with research assessment, in order to separate out elements of teaching and other institutional work, we can specify 'research citizenship' as those broader duties of service to institutions and communities as they relate specifically to research activities. Abstracting these elements from Macfarlane's (2007) model of academic citizenship, we can distinguish core research citizenship concepts:

(1) *Leadership:* Activities to set direction and spur research activities including involvement in community or institutional initiatives, committees, journals, research groups, and scholarly societies.
(2) *Mentorship:* Activities from more experienced researchers to provide influence, guidance, or direction to assist or advise more junior colleagues (including research students, institutional colleagues, and academic peers) in their personal and professional growth (Macfarlane 2007).
(3) *Collegiality:* An underdetermined concept (Dawson et al. 2022) implying respect, shared responsibilities, and/or collaborative manners of interaction within

community or institutional frameworks (Cipriano and Buller 2012; Haviland, Alleman, and Cliburn Allen 2017; Dawson et al. 2022).

(4) *Evaluation and curation:* Activities supporting the improvement, quality assurance, selection, and curation of the research work of others, including conference organization, publishing editorial activities, and peer review (e.g. grant applications, publications, and RPT applications).

Research citizenship activities are hence the glue that binds communities, builds relationships, and spurs growth and development of research and researchers. However, it is generally found to be under-rewarded (Macfarlane 2007; Rice et al. 2020; Davids 2022), with the potential exception of collegiality, which is sometimes in fact argued as a 'somewhat controversial "fourth" criterion' in faculty evaluation (Hatfield and Cheek 2012).

1.4 Previous studies on attitudes

Studies on researchers' attitudes towards assessment in RPT mirror results from document analyses, in that researchers perceive a strong focus on quantification and journal prestige, in what is known as the 'publish-or-perish' culture (Adler, Ewing, and Taylor 2009; Walker et al. 2010; van Dalen and Henkens 2012; Niles et al. 2020; Maddox et al. 2022). This focus on criteria commonly perceived as 'traditional' is in tension with other demands and goals that researchers are facing, such as disciplinary criteria of quality or the increasing relevance of the Impact Agenda (Hammarfelt and Haddow 2018; Haddow and Hammarfelt 2019; Vanholsbeeck 2022). Based on a survey of implementation scientists, Maddox et al. (2022) report a substantial mismatch between what researchers perceived as important factors for successful scientists (e.g. conference presentations, service, impact on the research and local communities, etc.) and what they perceived as being important for academic success in tenure and promotion (e.g. number of publications, journal quality, acquiring external funding, etc.). This mismatch is particularly prominent in the 'triple bind' described by Vanholsbeeck (2022): while being trained based on values derived from the 'traditional university', early-career researchers are increasingly exposed to the demands and evaluation criteria of the 'neo-liberal university' and also exposed to new values and demands of the 'open university' with Open Science policies and the demand for impact beyond academia.

1.5 Researcher roles and institutional contexts

Our study is concerned with understanding what researchers believe should be valued in RPT processes and how this differs from what they perceive their institutions to value (as codified in RPT policies). However, norms of academic self-governance mean that established researchers usually play the roles of both assessed and assessor depending on the context. Within RPT processes, academics are also usually able to contribute to both setting institutional RPT policy and implementing it through their place on promotion committees and boards. This intersection of roles somewhat blurs the distinction between institution and individual. (We are grateful to our anonymous reviewer for raising this point.) Dobbins, Knill, and Vögtle (2011) identify 'three historically entrenched and still highly relevant' models of academic governance:

'state-centred' where governments 'define bureaucratic and academic norms', 'self-governance' where academics play the central role in decision-making, and 'market-oriented' with high levels of university management autonomy and a strong role for administrative staff in academic staff selection. Self-governance models are generally seen to have been weakened over the last decades through the influence of neoliberal quasi-marketization (de Meek 2003; Macfarlane 2005; Boer, Enders, and Schimank 2008; Bonaccorsi 2015; Dobbins and Knill 2017; Ahlbäck Öberg and Boberg 2023). Despite such 'decollegialization', major cross-country surveys show academics' tendency in most countries to see themselves as the main players in promotion and tenure decision-making. Results from another survey of twelve European countries (Aarrevaara and Dobson 2013; Park 2013) found that academic staff selection remains a key area where (with some exceptions) academics perceive themselves 'the major stakeholder' (Aarrevaara and Dobson 2013). Fisher, Locke, and Cummings (2011) meanwhile, reporting findings from the Changing Academic Profession survey of eighteen countries, found that this is most pronounced in Canada, Italy, Japan, and Portugal and slightly less in Finland, the UK, and USA. Academics from Germany and the 'emerging' countries covered (especially Brazil, China, and Malaysia), however, thought others including government and external stakeholders to be more powerful.

Given this, institutional values have what Kraatz, Flores, and Chandler (2020) call a 'reciprocal dependence on people'. They are at once historical in the sense that they 'have some tendency to persist irrespective of the actions of its current inhabitants', but nonetheless 'this history is ongoing, and the people who occupy the institution at any given moment have some real ability to impact its development (for better or worse)'. In addition, the extent of this agency varies across national contexts. We will return to these themes in our Section 4 when teasing out the implications of our findings.

1.6 Aims of this study

We perceive a clear need to better understand the ways in which current policies support or conflict with new attitudes, values, and practices regarding quality in research, open and responsible research practices, and other elements of assessment. We investigate what researchers internationally perceive is currently valued in RPT processes and what they themselves think should be. No hypotheses were pre-registered in advance, but (based on the foregoing) survey construction was guided by a general prior expectation that value mismatches may exist in the values researchers and institutions assign to quantification, quality, open and responsible research practices, and research citizenship activities in RPT processes. Our research questions are as follows:

(1) What importance do active researchers internationally believe should be accorded to various traditional and non-traditional criteria related to research contributions in RPT procedures?

(2) What are the perceptions of active researchers of the importance of these same criteria within the policies of their current institutions?

(3) What mismatches can be observed between researcher values and perceived values of their institutions?

2. Methodology

2.1 Sample, instrument, and timeline

Our target audience was active researchers across research domains internationally. The survey sample was constructed by randomly extracting e-mail addresses of corresponding authors who published research papers in the period from 2014 to 2020 from research manuscripts hosted within CORE, a worldwide aggregator of OA content from repositories and journals (Knoth and Zdrahal 2012).

The survey was divided into five major sections: (1) institutional context including participants' employment status, mid-term employment intentions, and familiarity with employers' RPT policies; (2) participants' perceptions of the criteria in their institutional RPT policies; (3) participants' own sense of the importance of the same criteria; (4) participants' own Open Science and RRI practices; and (5) demographics. The survey was in English and totalled thirty-one closed- and open-ended questions. The instrument is included within the published dataset for this research (Pontika et al. 2022b).

Pre-testing of the survey took place in May/June 2021. Feedback (via e-mail or Google form) was received from a total of eleven people (contacts of the authors). Cognitive interviews were conducted with two researchers. Based on this feedback, revisions were then made to streamline the survey and make it more understandable. Testing indicated an average completion time of around 11 min.

The survey instrument was administered via the LimeSurvey tool, hosted by the Know-Center. All survey participants received an e-mail invitation via MailChimp with an individualized token to ensure participant anonymity (LimeSurvey would match a participants' name with a token behind the scenes, and thus, the name would never be used by the researchers). The survey was sent out on Tuesday, 29 June 2021. Three periodic reminders were then sent on 6th, 13th, and 20th of July to those who had not yet completed the survey. The survey was then closed on Friday, 30th July.

The survey was originally sent out to 16,500 e-mail addresses, of which 2,536 e-mails were returned as undelivered and 2,501 e-mail recipients were unsubscribed from receiving e-mails. In the end, the survey e-mail hence reached 11,463 participants (total response rate 2.81 per cent, $n = 323$).

2.2 Ethics and informed consent

Upon commencing the survey, all survey participants were presented with a page detailing survey goals and all information required for informed consent, including the following: that participation in the study was voluntary; participants were free to withdraw at any time; data would be anonymized and stored securely in accordance with General Data Protection Regulation; anonymized data would be used to create public research articles, books, reports, presentations, and other forms of research dissemination; contact details (e-mail address) of the survey lead for any questions or feedback. Participants were required to read this information and give their informed consent to proceed with the survey. No ethical approval was sought as the parent institution (TU Graz) does not require formal approval for survey studies.

2.3 Data availability and analysis

Of the total 323 responses received, forty-one respondents were excluded who answered 'no' to an initial 'stop question' which asked whether they were currently 'conducting research as part of a contract at a higher education institution' (as our survey targeted only active researchers in academia). A further eighty-four incomplete responses were also excluded. We therefore consider $N = 198$ responses for our analysis. (*Note:* in presenting our results, we use capital 'N' as notation for the analysed sample size, e.g. $N = 198$. A lowercase 'n' will be used to denote a specific size within a sample, e.g. $n = 90$.)

All data analysis was conducted using R (R Core Team 2021), with the aid of many packages from the *tidyverse* (Wickham et al. 2019), including *ggplot2* for visualizations (Wickham 2016). Figures further greatly benefitted from the work of Bob Rudis (Rudis 2020a, 2020b). Computational reproducibility of the analysis is ensured through the use of the *targets* package (Landau 2021).

All data and analysis code are available via Zenodo (Pontika et al. 2022b).

3. Results

3.1 Demographics and institutional context

Full analyses of respondent demographics are available in Supplement 1, Section 1. To summarize, our 198 respondents were all active researchers who

(1) Were mainly based in Europe and North America (most represented countries UK, USA, Italy, the Netherlands and Sweden), although there was a long tail of international representation encompassing forty-three countries from six continents.
(2) Skewed male (70.7 per cent), with females composing 28.3 per cent, two respondents preferring 'not to say', and none indicating 'non-binary'.
(3) Tended to be more senior: 'Professor' 41.4 per cent, 'Senior Lecturer, Associate Professor, Senior Researcher' 36.4 per cent, 'Lecturer, Assistant Professor, Research Fellow' 14.6 per cent, and junior researchers ('Pre-/Post-doc') 6.1 per cent.
(4) Mainly worked at institutions which were 'both research and teaching intensive' (59.1 per cent), with 24.2 per cent at 'Research intensive' and 11.6 per cent at 'Teaching intensive' institutions (5.1 per cent 'Other').
(5) Derived from a wide variety of academic fields: Life sciences/Biomedicine (44.7 per cent), Technology (19.8 per cent), Social Sciences (18.3 per cent), Physical Sciences (13.7 per cent), and Arts/humanities (3.6 per cent).

To understand the institutional context of our respondents, we asked a series of questions examining current career intentions and knowledge of their institution's policies. Four fifths of respondents had permanent contracts (80.3 per cent, $n = 159$). Fig.1 shows respondents' future intentions regarding their position. Almost three quarters saw themselves working at the same institution in 5 years (73.7 per cent, $n = 146$). Asked whether they intended to apply for promotion within the same period, and more respondents did intend
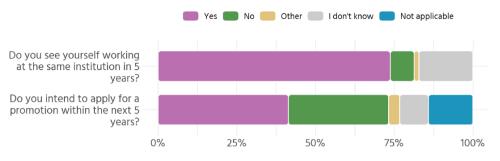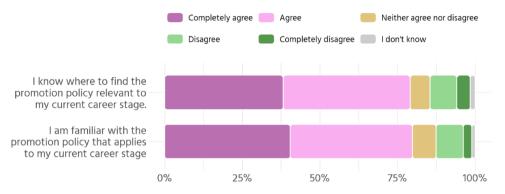
Figure 1. Mid-term employment intentions.

Figure 2. Familiarity with institutional promotion policies.

to do so (41.4 per cent, $n = 82$) than did not (31.8 per cent, $n = 63$).

Survey respondents were next asked questions related to their familiarity with the promotion, review, and tenure policies at their institution (Fig. 2). Asked to agree or disagree whether they know where to find the promotion policy relevant to their current career stage as a researcher (e.g. institution's website, intranet, or handbook), around four in five agreed. Almost identical numbers responded positively to the statement 'I am familiar with the promotion policy that applies to my current career stage'.

3.2 Institutional policies and researcher attitudes towards research assessment criteria in promotion decisions

We next sought to (1) gauge researchers' perceptions of the extent to which a range of criteria were important within their institutions in promotion, review, and tenure processes, (2) gauge how important researchers themselves thought that these criteria should be, and (3) understand differences between these personal priorities and the (perceived) importance within existing institutional research assessment policies.

The first question of this group, 'perceived institutional view', asked respondents to rate the importance of a series of activities in making promotion decisions in relation to their current career stage on a scale from 'very important' to 'very unimportant' (Fig. 3).

Respondents signalled that most criteria were important (sum of 'very important' and 'somewhat important') in the stated policies of their institutions when making promotion decisions, with thirteen of nineteen indicators rated as such by more than 50 per cent of respondents and only two (sharing research data and code) rated as unimportant by more

respondents than thought them important. The most important factors were, in line with the literature (Section 1), generating funding (93.2 per cent very/somewhat important), leading projects (87.5 per cent very/somewhat important), and generating high-quality publications (87.3 per cent very/somewhat important). However, other elements linked to questionable practices identified in Section 1 were also dominant, with publishing in highly regarded conferences and journals (84.7 per cent very/somewhat important) and publishing large numbers of articles (83.2 per cent very/somewhat important) also indicated as important by more than four fifths of respondents. Criteria related to Open Science practices (i.e. publishing OA, sharing research Code, and sharing Open Data), on the other hand, were not generally considered very important in institutional policies (rated as very/somewhat important by 34.2 per cent, 29.5 per cent, and 29.1 per cent, respectively).

Each criterion was considered 'not applicable' by at least some respondents, with those criteria relating to open and responsible research (sharing code/data, or engaging with industry/policymakers) rated as 'not applicable' most often. These answers probably reflect methodological differences. In the humanities, for example, fewer studies are likely to create code or data for sharing, while some 'basic' research might not be considered to have practicable implications for policymakers. Although not perhaps surprising, observing that these practices are not universally applicable across the research spectrum is a valuable reminder that criteria must be tailored to specific contexts.

We next asked for researchers' *own* opinions on how important they thought these same criteria *should be* for promotion decisions (Fig. 4). Clear differences emerge in these personal responses, with greater emphasis given to the quality per se of research work, care aspects like mentoring and leadership, and collegiality. The most desired criteria were 'Generating high-quality publications, as assessed by independent
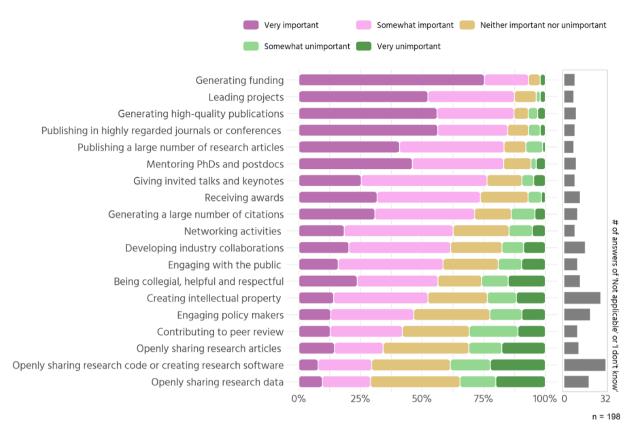
Figure 3. Perceived importance of activities within institutional policies for promotion decisions in relation to the current career stage (*N* = 198).

qualitative assessment (e.g. peer review)' (96.5 per cent very/somewhat important); 'Mentoring PhDs and postdocs' (94.9 per cent very/somewhat important); 'Leading projects' (89.4 per cent very/somewhat important); and 'Being collegial, helpful, and respectful' (88.8 per cent very/somewhat important). However, the eighth most important factor was given as 'Publishing in highly regarded journals or conferences (as measured by e.g. JIF conference rank, etc.)' (77.3 per cent very/somewhat important), demonstrating the continued (perceived) importance of publication venues (and the metrics used to rank them). The least important factors, according to the personal views of respondents, were 'Developing industry collaborations' (58.2 per cent important/very important) and 'Creating intellectual property' (47.5 per cent important/very important). However, even in these cases, more participants judged them important than who thought them unimportant.

These two sets of results indicate a mismatch in perceptions of importance of criteria according to the researchers and their institutions. We next compare these differences. Figure 5 orders these comparisons relative to whether criteria are perceived as more important to the researcher or the institution (at the bottom). The largest mismatches where researchers favoured criteria more than institutions (ordered towards the top) were in factors related to esteem and community (e.g. mentoring, peer review, giving invited talks, and collegiality) and open and responsible research (OA, Open Data, open code/software, and engagement with the public and policymakers). Although these are not necessarily the factors respondents thought most important overall, these results nonetheless indicate substantial mismatches between what

individuals value and what they perceive their institutions to value.

On the other hand, there were a few cases where respondents thought criteria less important than they perceived their institutions to (order towards the bottom of Fig. 5), with the largest such discrepancies related to generating research funding and generating large numbers of publications. This supports our suggestion in the review section that current promotion policies are seen as overly focused on quantitative indicators (sheer amounts of research funds brought in or research outputs created) rather than on the quality of the work conducted with those funds or reflected in those publications.

3.3 RPT policy influence on publication venue decisions

To further examine how research assessment criteria may shape publication decisions, survey participants were also asked whether in the last 3 years their choice of publication venue (e.g. journal, book publisher, conference, etc.) had been influenced by the RPT policies of their institution (Fig. 6). More than a third of respondents reported that this was indeed often or very often a factor (37.1 per cent), while roughly the same (36.5 per cent) advised that this was a factor rarely or very rarely.

3.4 Attitudes to criteria for diversity

Respondents were also asked to indicate how important within their institutional policy were criteria with respect to equality, gender, and diversity. Respondents were asked
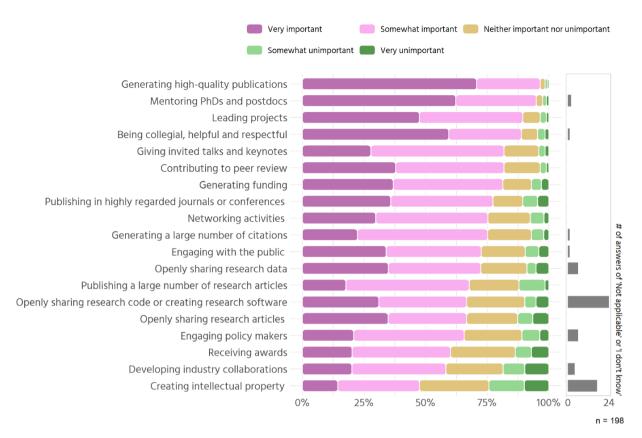
Figure 4. Respondents' personal opinion about criteria related to promotion decisions in relation to the current career stage (*N* = 198).

to agree or disagree with the following statements about promotion processes at their institutions:

(1) Where two candidates are equally qualified, candidates from under-represented groups are preferred (e.g. women/men or minority groups) for promotion.
(2) Where possible, promotion committees include representative numbers of women and minorities.

Results (Fig. 7) show that according to our respondents, about a third of institutions actively seek to promote women and minority groups where two candidates are equally qualified, while more than half actively seek representation of women and minorities on promotion committees. We should also note that the relatively high numbers of respondents answering 'don't know' or 'not applicable' to this question in itself are perhaps an indicator that levels of knowledge on these issues may need to be increased.

Participants were then asked to what extent they personally agree with general statements of principle, mirroring these two statements related to equality, women and minorities, but now with the focus on their personal opinion (Fig. 8).

The fact that participants heavily favoured both factors more than they perceive is currently reflected in their institutional policies, indicating general support for greater expansion of these principles. In particular, that 77.8 per cent of respondents either agreed or strongly agreed that promotion committees should strive for equitable representation regarding gender and diversity conveys a particularly strong message in this regard.

3.5 Exploratory analyses

We performed analyses to investigate the impact of demographic factors on these responses. These additional analyses were all exploratory (no hypotheses were constructed or registered in advance). Overall, mostly only small effects (where any) were found. This, in combination with our relatively small sample, means that these exploratory findings should therefore be interpreted with caution. We report them here primarily for completeness and as potential avenues for future research (full reporting in Supplement 1, Section 2):

(1) In their personal views on RPT criteria, women tended to give higher importance to 'research citizenship' community activities and societal and economic impact than do men (all other aspects being similar) (Fig. S5).
(2) Regarding the country of participants, we found no substantive correlations in our data beyond a relatively low perceived institutional relevance among US respondents for societal and economic impact (Fig. S6).
(3) Regarding academic age (years since first publication), no substantive correlations were found. However, of potential interest is that there seems to be an inverse U-shaped pattern, where academically older and younger respondents generally find societal, economic, and alternative academic impacts to be more important than those in the middle (academic age of 15–30 years) (Fig. S7).
(4) As might be expected, stronger opinions in favour of OA correlated with higher shares of the respondents own papers made OA (Fig. S9).
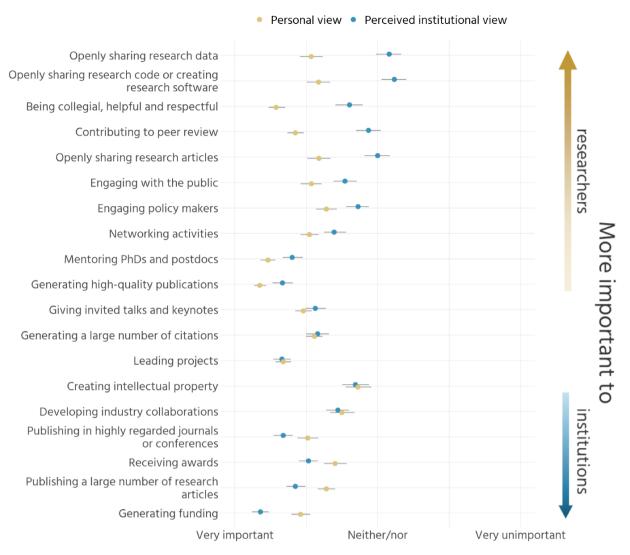
Figure 5. Comparison between personal and perceived institutional view on promotion criteria. For each item, we calculated the mean of the responses by mapping categories ('very important'–'very unimportant') to numerical values (1–5). We omit the answers 'I don't know' and 'not applicable'. Points represent the mean, and error lines represent bootstrapped 95 per cent confidence intervals. Sample sizes for the estimates vary based on the extent of answers towards 'I don't know' and 'not applicable'.
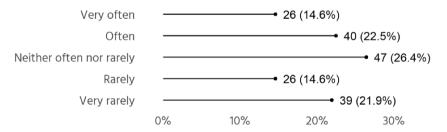

Figure 6. Influence of RPT policy on the choice of publication venue (e.g. journal, book publisher, and conference) (*N* = 178, excluding those answering 'don't know'/'does not apply').

(5) We found a moderate level of alignment between the extent to which respondents said that engagement with the public, policymakers, and industry was important for their research and the extent to which these elements were prominent within their institutional policies (Fig. S12).

4. Discussion

4.1 Study limitations and overall contributions

Our study is subject to several limitations which should be kept in mind when interpreting results. First, several factors limit the generalizability of our findings, including our relatively small sample, low response rate, uneven geographic
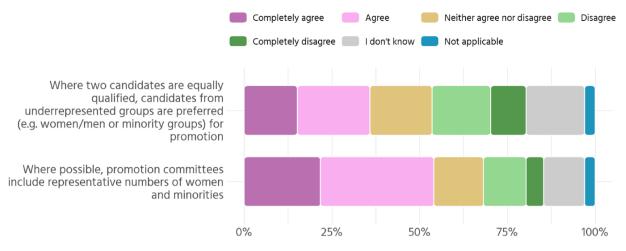
Figure 7. Institutional policies on equity and diversity in promotion processes ($N = 198$).
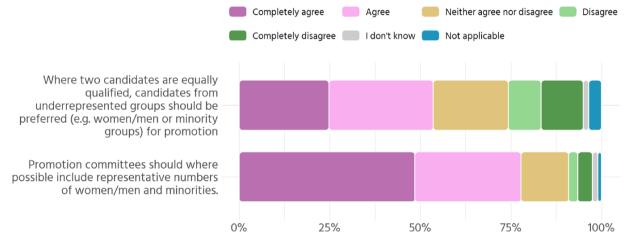
Figure 8. Personal opinions about equity and diversity in promotion processes ($N = 198$).

coverage (favouring Europe and the USA) and demographic skew in favour of male, and senior academics from STEM subjects. Our sample may also be subject to self-selection bias (Bethlehem 2010), in that academics particularly satisfied or dissatisfied with RPT processes may have been more likely to have responded. Our respondents also derive from a variety of institutional and geographical contexts. As stated earlier (Section 1.5), structures of academic governance vary greatly across these contexts. While our exploratory analysis (Fig. S6) revealed no substantial correlations between the three countries for which we had the most numerous responses (UK, USA, and Italy), the small sample size prohibited further exploration of other countries.

Finally, we can question the degree to which investigating values in the abstract can tell us about real-world praxis. Self-reported values and perceptions of institutional values may be biased by researchers' own perceptions and other factors, including 'socially desirable responding' (Paulhus 2001) or 'illusory superiority' (Niles et al. 2020). In addition, values do not necessarily translate into action. Especially in research on environmental action, there is a growing literature on what is termed the 'value-action gap' (Blake 1999; Barr 2006; Flynn, Bellaby, and Ricci 2009), which has been suggested to be observable in relation to Open Science practices (Köster et al. 2021). Our survey methodology does not enable follow-up

questioning or deeper exploration of the ways researchers' values may or may not be expressed through action when themselves assessing or being assessed and subject to the pragmatic need for decisions within the constraints of specific evaluative settings. We reflect further on this in the Subsection 4.2.

Despite these limitations, we believe that our results add valuable context to current discussions on reform of research assessment to better support open and responsible research practices and avoid problematic applications of quantitative indicators.

Our findings demonstrate a mismatch between researchers' own values of what should be considered important in research careers and their perceptions of what is valued at their institutions. A brief review of the top five most important criteria for researchers next to their reported perceptions of importance to institutions (Table 1) shows the disjunct in personal and perceived institutional values. While what is seen to matter most to institutions is bulk in terms of grant money brought in and outputs created, personal priorities centre more on aspects like quality, mentoring, collegiality, and leadership.

Respondents ascribed more importance than is perceived to be reflected in their institutional RPT policies to most criteria, including those related to open and responsible research,

Table 1. Comparative view of top five most important elements of RPT criteria for both institutions (as perceived by researchers) and researchers themselves.

	Perceived institutional priority	Personal priority
1	Generating funding	Generating high-quality publications
2	Leading projects	Mentoring PhDs and postdocs
3	Generating high-quality publications	Leading projects
4	Publishing in highly regarded journals or conferences	Being collegial, helpful, and respectful
5	Publishing a large number of research articles	Giving invited talks and keynotes

but ascribed less value to quantitative factors such as levels of funding and brute numbers of publications. They also favoured greater observation of principles of equity and diversity regarding gender and minorities in RPT processes than is seen to be reflected in current policies. In this section, we will discuss the broader implications of these findings.

4.2 Value dissonance

That factors like publication quantity, funding, and journal prestige are highly prioritized in RPT processes, while practices linked to research citizenship or open and responsible research are not, which is unsurprising and well-documented (Walker et al. 2010; van Dalen and Henkens 2012; Alperin et al. 2019, 2022; McKiernan et al. 2019; Niles et al. 2020; Rice et al. 2020, 2021). However, through quantifying the mismatch between perceptions of current institutional criteria and what researchers value, we hence suggest that researchers currently face 'value dissonance' when negotiating research(er) assessment processes.

Bruhn (2008) defines value dissonance as 'a distressing mental state in which people find themselves doing things that they do not highly value or having opinions that do not fit institutional norms or fit with the opinions of those who monitor and enforce them'. Closely related is what Anderson et al. call 'normative dissonance', exposed by their study in which respondents claimed much higher adherence to the 'Mertonian norms' (proposed principles of desirable behaviour: communality, universalism, disinterestedness, and organized scepticism) for themselves than among their peers, who they judged more likely to value 'counternorms' of secrecy, particularism, self-interestedness, and organized dogmatism (Anderson, Martinson and De Vries 2007). Similar effects were identified by Niles et al. (2020), who asked researchers what criteria they took into account when making decisions over where to publish. Respondents claimed to value journal readership and OA most, yet saw their colleagues as driven mostly by journal prestige, metrics (e.g. JIF), and bonus payments. The authors then modelled respondents' criteria for publication decisions, against a range of demographics factors (age, gender, institution type, and tenure status), as well as perceptions of RPT criteria. They found that RPT perceptions were by far the factor most frequently linked to publication decisions. Our finding that a third of respondents reported

that their RPT policies had informed their choice of publication venue often or very often in the preceding 3 years (Fig. 6) somewhat helps quantify this impact. However, the fact that around the same share of respondents noted that this was rarely or very rarely a factor suggests a need for nuance in overly deterministic assessments of the impact of such policies.

Such dissonance can lead to adverse effects. As Anderson, Martinson, and De Vries (2007) point out, it may 'provide a rationale for abandoning one's principles in a given situation' and hence play a role in 'regulatory compliance, questionable research conduct, and even misconduct' (cf. discussion of injunctive and descriptive norms in Section 1). Value dissonance may even negatively impact mental health. In his study of ethical breaches in academia, Bruhn (2008) identifies 'value dissonance' to be a major factor. Schaible and Gecas (2010), in the context of policing, also identify the 'structural paradox' of value dissonance as contributing to negative psychological effects of 'depersonalization and emotional exhaustion'. Our results hence suggest that similar mechanisms may be at play in academia and could exacerbate other factors like hypercompetition, limited resources, and precarity (Kamerlin 2015; Edwards and Roy 2017; Butler-Rees and Robinson 2020) in further fuelling well-known unhealthy dynamics of overwork and poor mental health (Tijdink, Vergouwen and Smulders 2013, 2014; Padilla and Thompson 2016).

In considering the implications of this, we must return to two complicating factors mentioned earlier. First, given academic self-governance, can we untangle the individual from the institution (cf. Section 1.5), and how is 'value dissonance' experienced and negotiated across contexts of assessor and assessed? This is undoubtedly an area where further research using qualitative methods to investigate specific contexts is desirable. The existing literature enables us to make some inferences, however. First, in those contexts with higher levels of self-governance, although academics believe that they communally have most influence over RPT processes (via committees and boards), they attribute far less agency to themselves as individuals (Park 2013: 189) and generally perceive this collegial influence to be diminishing (Cummings, Fisher, and Locke 2011). Second, perceptions of individual agency are generally higher in departmental decision-making than at the level of faculty and institution where RPT criteria are often set (Park 2013: 186). These low perceptions of individual influence and influence in group-level decision-making above the departmental level, combined with the tendency to underestimate the degree to which values are shared by peers (Anderson, Martinson, and De Vries 2007; Niles et al. 2020), may, we suggest, diminish expectations of agency in setting the institutional agenda.

Researchers maintain agency nonetheless, however. Malsch and Tessier (2015), in their auto-ethnographic exploration of their experiences as junior researchers of the use of journal ranking criteria within their own institutions, describe 'identity fragmentation' (similar to value dissonance) and 'identity politicization' 'driving them, professionally and intellectually, in contradictory directions and throwing them into academic politics'. Importantly, though, Malsch and Tessier describe these phenomena as 'ambivalent' as they can also 'stimulate a deeper form of reflexivity and action' through increased awareness of the self and the 'political stakes of the field'.

Relatedly, picking up the point from the previous subsection regarding the gap between values and actions,

we must also acknowledge the situatedness of assessment practices. There are multiple reasons why values may not translate into actions, including the level of commitment to those values, whether they are based on direct or indirect experience and situational or environmental constraints beyond the individual's control (Blake 1999; Conner and Norman 2022). Again, our study methodology does not allow further investigation of these factors. To suggest just two key inhibiting factors for now: first, Brunet and Müller (2022) introduce the term 'evaluative pragmatism' to describe how reviewers for European Research Council grants adopt behaviours acknowledged to have 'drawbacks' due to 'conditions of hypercompetition', constraints of 'time, and, often, lack of expert knowledge'. (Again, we are indebted to an anonymous reviewer for this observation.) Hammarfelt and Rushforth (2017), meanwhile, advise that in addition to their ease of availability and relative simplicity, bibliometric indicators like the JIF or *h*-index may also be adopted simply due to their normative place as 'well-established tools' within certain fields. We hence suggest further investigation of the ways in which value dissonance may be experienced and negotiated within situated assessment contexts as an area for future qualitative investigation.

4.3 Quality versus quantity

According to our respondents, quantitative measures such as volume of grant funding, numbers of publications, and prestige of publication venue (often operationalized via metrics like JIF) are given greater weight than they would themselves assign. In contrast, researchers felt that high-quality publications were undervalued. Our results would hence seem to generally support current perceptions that quantity and quantification are over-valued in current RPT processes and validate current moves to reform research assessment to correct this imbalance. The relative weighting of these elements is revealing. In perceptions of institutional criteria, quality of publications was still the third most important factor, rated higher than publication venue (fourth) or quantity of publications (fifth). Yet for researchers, publication quality was the top criterion, rated very or somewhat important by virtually all respondents. Publication venue was still rated somewhat highly (ranked eighth), and publication quantity still rated at least somewhat important by more than 60 per cent.

These results might partly be attributable to the degree to which regimes of quantification have been internalized by respondents. But they might also be valuable reminders that these 'indicators' could retain some place in a world of 'responsible' metrics (Hicks et al. 2015). For instance, although the 'judge a book by its cover' logic of using publication venue, quantified via metrics like JIF, as a sensible indicator of the worth of individual pieces of research published in those venues is now widely discredited (DORA 2012; Hicks et al. 2015; Wilsdon et al. 2015), it may nonetheless retain worth as an indicator of leadership and esteem, for example. The main point, well-established by the Metric Tide report (c.f., Hicks et al. 2015; Wilsdon et al. 2015), is that responsible assessment should use quantitative indicators in service to qualitative assessment and that responsible metrics require robustness (accurate and applicable data), humility (metrics support qualitative assessment), transparency (enabling open evaluation of assessment processes), diversity (context-appropriate metrics), and reflexivity (anticipatory governance of metrics-enabled processes).

4.4 Open and responsible research

Open and responsible research practices seem undervalued by institutions (as perceived by researchers), but they also do not appear among researchers' own top priorities. Of the nineteen criteria we presented, open and responsible practices all appeared in the bottom half (engaging with the public 11th, sharing research data 12th, sharing code/software 14th, ensuring OA to research articles 15th, and engaging policy makers 16th). Some of this is explained by the identified correlation with researcher opinions of these elements in general (Fig. S6), but even among those with high adherence to these practices, they were still generally not prioritized. In a comparable study addressing early-career researchers in Belgium, Bonn and Pinxten, (2021) identified that such practices were 'often described to be important or even essential for advancing science, but irrelevant, unfavourable, or sometimes detrimental in advancing one's career'. They identified barriers including lack of awareness, lack of consensus on best practices, issues regarding funding for OA article-processing charges, and 'added burden and new ethical challenges' related to transparency of processes and data-sharing.

A further risk to equitable outcomes in research assessment reform consists of how practices are valued. Open and responsible practices accounted for three of the top five criteria with highest numbers of respondents indicating 'not applicable', likely reflecting epistemic diversity across spectra of approaches in knowledge creation (Leonelli 2022). This should serve as a further reminder that RPT criteria must be tailored to epistemic contexts. Too heavy a hand in imposing, for example, criteria of openness upon more qualitative domains where transparency is problematic (e.g. due to sensitivity of data), risks further devaluing such approaches (Leonelli 2018; Penders, Holbrook, and de Rijcke 2019; Ross-Hellauer et al. 2022). Equally, attitudes to public engagement vary across disciplines (Püttmann, Ruhose, and Thomsen 2022), and many researchers, including those in highly specialist or theoretical fields, judge that either their research is 'not sufficiently accessible to the public or that the public cannot add any value' (Hamlyn et al. 2015).

Fears that overly broad measures may be adopted should not be discounted as theoretical. To give two recent examples: (1) Utrecht University's (a research-intensive general institution at the vanguard of current research assessment reform efforts in Europe (Woolston 2021)) 'Recognition and Rewards Vision' contains the commitment that future 'evaluation of academic processes and outcomes *in all domains* should emphasize transparency, reproducibility, and public engagement' (Utrecht University 2021, emphasis added) and (2) the otherwise carefully crafted COARA (a European Commission backed a coalition of 'willing organizations', which seeks a 'shared direction for changes in assessment practices for research, researchers, and research performing organizations'. See https://coara.eu/) agreement also slips into such overgeneralization, e.g. 'Quality implies that research is carried out through transparent research processes and methodologies' (COARA 2022).

4.5 Research citizenship

In line with the literature on lack of support for academic citizenship in general (Macfarlane 2007; Rice et al. 2020; Davids 2022), respondents perceived that aspects of research citizenship (especially collegiality, peer review, and networking) were generally undervalued in institutional policies. Indeed, many aspects were outright among the most valued aspects in respondents' own opinions, including mentorship (of PhDs and postdocs, second most valued of nineteen aspects), leadership ('leading projects' third, 'invited talks/keynotes' fifth), collegiality ('being collegial, helpful and respectful' fourth), and evaluation ('contributing to peer review' sixth).

Collegiality is a special case here. As described in the Section 1, collegiality has even been argued a 'fourth criterion' alongside research, teaching, and service (Hatfield and Cheek 2012). Dawson et al. (2022) found that it plays 'an important role in RPT processes, whether it is explicitly acknowledged in policies and guidelines or not'. In our survey, the disjunct for this element (third highest overall) between respondents' own views (third most important) and their perceptions of institutional policies (13th most important) is hence especially interesting as it runs somewhat counter to previous studies. In addition, we should note that concerns have been raised about the extent to which effects of homophily may bias fair assessment of collegiality, promoting homogeneity of thought and potentially enabling discrimination (AAUP 2016; Dawson et al. 2022). However, boosting collegiality would seem desirable, especially since the alienating effects of lack of collegiality may contribute to the kinds of value dissonance discussed earlier (see, e.g. Austin 2002).

Research citizenship activities are hence the glue that binds communities, builds relationships, and spurs growth and development of research and researchers. The importance our respondents placed on these activities should not be overlooked. In fact, we would suggest that addressing these perceived shortcomings could play an important role in the broader reform of research assessment to better value open and responsible practices. By foregrounding greater respect for community-binding values like collegiality and mentorship, negative effects of currently dominant norms of hyper-competition and self-interestedness that run counter to these practices could be mitigated (Köster et al. 2021).

4.6 Diversity

Finally, our findings have potential implications for diversity. Our respondents clearly favoured, far more than they felt was represented by current institutional policies and processes, both preference for candidates from minority backgrounds (where two or more candidates were equally qualified, more than 50 per cent agreeing) and especially greater gender and minority representation in RPT committees (more than 75 per cent agreeing).

Our findings from exploratory analyses that women tended to give higher importance to research citizenship and societal/economic impact activities (Fig. S5) also have implications. Women are known to contribute disproportionately to academic citizenship activities generally (Burton, Wilson, and Cook 1997; Macfarlane 2007; Sümer, O'Connor, and Le Feuvre 2020). In addition, as institutions increasingly introduce welcome initiatives to address diversity issues and institutional racism, scholars from minorities are often subject to 'cultural taxation' (Padilla 1994) as they are asked to undertake unrecognized work to engage with and even spearhead these activities (Gewin 2020). Ensuring that these research citizenship activities do not go unrecognized is essential in reform of research assessment.

5. Conclusion

Our analysis of researchers' attitudes towards assessment processes of RPT reveals a disjunct between personal beliefs and perceived institutional priorities ('value dissonance'), as well as the potentially corrosive effects of this phenomenon. We have shown that practices of open and responsible research, as well as 'research citizenship', are seen to be comparatively poorly valued at present. Corrective measures to move beyond the primacy of brute quantitative indicators of amounts of research funding and numbers of publications might reduce researchers' perceived dissonance and lead to more equity in promotion, review, and tenure processes.

We have, however, highlighted the need for nuance in reform: open and responsible practices were not among researchers' highest priorities. Whether this reflects a need to further awareness and 'win hearts and minds', or whether we should adopt more modest expectations for the degree to which researchers are expected to prioritize these activities, remains an open question for further research. However, our findings regarding the importance researchers believe should be given to 'research citizenship' activities may point towards an additional route to encouraging open and responsible research. By further foregrounding concepts like collegiality and mentorship, destructive norms of hypercompetition and self-interestedness could be countered. In addition, we have pointed to important concerns regarding diversity, especially that new criteria for open and responsible research must be finely attuned to epistemic diversity of research fields and methods.

Supplementary data

Supplementary data are available at *Science and Public Policy* online.

Conflict of interest statement. None declared.

Data availability

All supporting data and required code are available via Zenodo https://doi.org/10.5281/zenodo.7472276 (Pontika et al. 2022b).

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