Research Culture Challenges among Early Career Researchers: A qualitative study

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Abstract

Early career researchers (ECR) experience challenges particular to their career stage. Defining ECR as those with up to 10 years post-PhD experience, which includes postdoctoral research associates (PDRA) and graduate research students (GRS), this paper identifies some of the key issues that impact ECR based on qualitative research findings. The method used was a questionnaire in which 79 PDRA and 272 GRS from University College Dublin (UCD) responded to open-ended survey questions about research culture improvement, university acknowledgments, and promoting a positive research culture. Additional feedback was obtained from 23 PDRA and 57 GRS through post-survey focus group discussions. The challenges for ECR that were raised most consistently were: precarity, mentoring, and acknowledgement.

Keywords: acknowledgement; early career researchers; mentoring; precarity; research culture

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Introduction

The challenges facing early career researchers (ECR) differ from those encountered by researchers at later stages in their careers. For instance, ECR face greater challenges around precarious contracts, competition for jobs, increasing publishing pressures, fewer funding opportunities, and mental health difficulties, which may have been exacerbated during the COVID-19 pandemic (**da Silva, 2021**). Based on qualitative research findings that used content analysis of open-ended responses and focus group discussions, we identified key challenges in fostering a positive research culture for ECR. Among the issues raised, the three topics discussed here were mentioned most consistently in relation to ECR across all feedback: precarity, mentoring, and acknowledgement.

In 2021, the Research Culture Initiative at University College Dublin (UCD) was established under one of four pillars of the University's Research Strategy (**UCD Research, Innovation and Impact, 2021**). Its primary objective was to assess research culture at UCD and establish a baseline against which to measure future progress. The initial step was to survey the research community with quantitative and qualitative questions, which was undertaken in November 2021 (**UCD Research Culture Initiative, 2022a**). The survey was followed by a series of World Café focus groups, conducted in the Spring of 2022, intended to validate and extend the survey findings (**UCD Research Culture Initiative, 2022c**). Qualitative findings from the survey and focus groups are reported here.

Recognising that many cultures exist within the research community at UCD, our definition of research culture encompasses the way we do our research, our behaviours and attitudes to each other in our work, how we value the contributions of others involved in our research, and how our research is communicated. It underpins both research excellence and research integrity, describing how individuals, teams, research performing organisations, funders, publishers, and other stakeholders interact and support each other in the conduct of research.

Definition of ECR

A range of definitions for ECR exists, often counting time from the date that the doctoral degree was awarded. UK Research and Innovation, for example, identify an ECR as someone who is 'within eight years of their PhD award (this is from the time of the PhD 'viva' oral test), or equivalent professional training' but also consider an ECR to be someone 'within six years of their first academic appointment', where research or teaching are principal duties (**UK Research and Innovation, 2023**). The science research publisher Elsevier also describes an ECR based on the length of time since their doctorate was awarded – five years or equivalent professional

standing (**Elsevier, 2023**). In Ireland, the Royal Irish Academy considers an ECR to be someone who received their doctorate within the last eight years (**Royal Irish Academy, 2021**). For the purposes of UCD research culture analysis, the definition of an ECR is someone training in research who has no more than 10 years' experience post-PhD, which allowed for most postdoctoral research associates (PDRA) as well as graduate research students (GRS) to be included in the qualitative study. Within this framework, GRS are students working towards a research master's degree or doctoral degree. PDRA have already earned a doctorate or equivalent and are engaged in a research role where they benefit from on-the-job training which can last up to 10 years.

Methodology

For the present study, the primary method used was a questionnaire modelled on one used by the University of Glasgow in 2019 (**University of Glasgow, 2019**). Participants responded anonymously to fifteen questions in total (**UCD Research Culture Initiative, 2021b**): six questions collected demographic data; two Likert-scale questions asked how respondents perceived University support for programmes and positions that enable positive research culture and their individual experiences of support from colleagues and the institution; two multiple-choice questions gauged awareness of 11 elements of best practice in research; one question asked if research culture had improved in the last three years; four asked open-ended questions on three topics:

- Research culture improvement (*Reflecting on the past three years, do you think that research culture has improved at the University?*)

- University acknowledgments (*What University acknowledgement would you like to see for your research contributions?*)

- Promoting a positive research culture (*As an institution, what one practical thing could we do to promote a positive research culture?*)

Here, we report findings from the open-ended survey questions. GRS (n = 286) represented 27% of the total survey responses (**see Figure 1**) and 14% of all GRS at UCD (**see Figure 2**). PDRA responses (n = 79) accounted for 8% of the total survey responses (**see Figure 1**) and 26% of all PDRA at UCD (**see Figure 2**).

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Figure 1: UCD Research Culture Survey 2021, percentage responses from each research role.
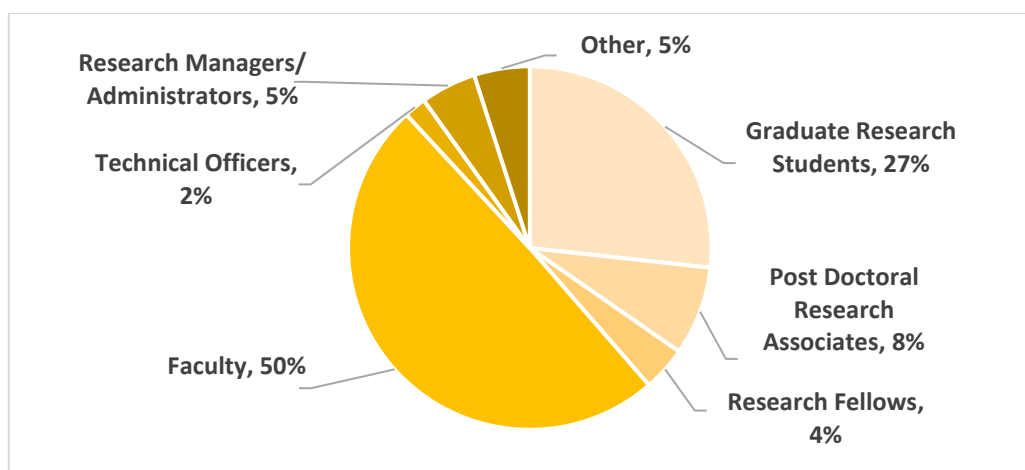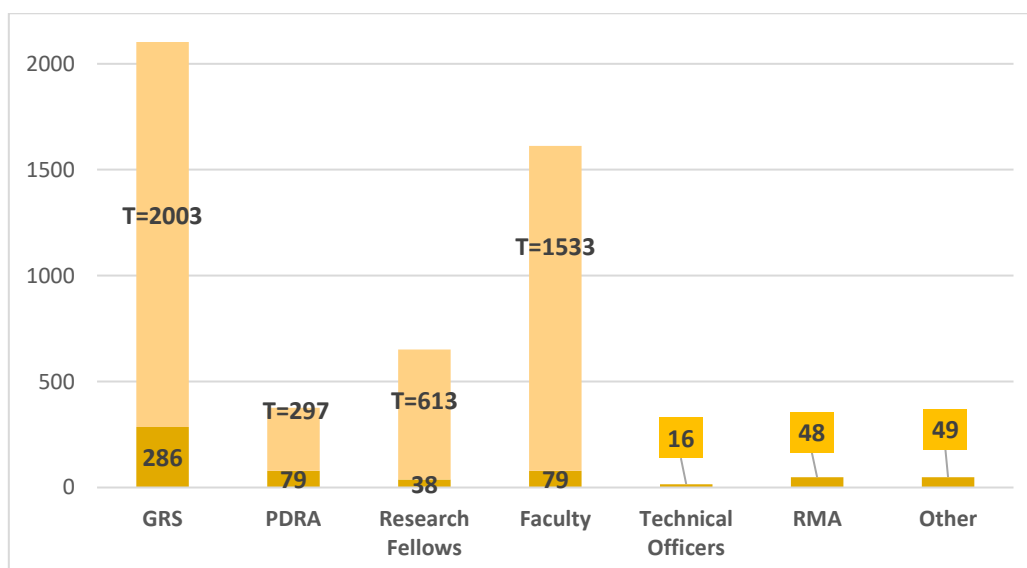

Figure 2: Response rate across roles. The total population (T) at UCD for GRS, PDRA, Research Fellows, and Faculty was determined by institutional statistics. For Technical Officers, Research Managers/Administrators (RMA) it was not possible to accurately determine total population at UCD.

Additional qualitative feedback was obtained from 23 PDRA and 57 GRS through post-survey focus group discussions conducted in the spring of 2022 (**UCD Research Culture Initiative, 2022c**). Modelled on Wellcome Café Culture knowledge cafés, these forums were intended to foster an inclusive, candid, and confidential environment with the goal of enabling participants to share their thoughts and feelings comfortably (**Wellcome, 2019**). Using semi-structured discussion techniques designed to move from general issues to specific points, the conversations addressed topics raised in survey responses. Within the broad Research Culture Initiative, a total of thirteen focus groups were conducted and in each the topics of collegiality and collaboration were discussed. Participants self-selected through an open call. Some may have responded to the Survey but as participation in the Survey was anonymous, identification was not possible. Two focus groups were held exclusively for GRS and a third for

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PDRA only. These ECR cafés were further tailored to include mentoring and parity of esteem as discussion topics.

Qualitative responses to each of the three survey questions and focus group comments were categorised into general themes using an inductive method, establishing themes from the text responses themselves. Observations about the experience of ECR at UCD and in the research ecosystem generally were made by GRS and PDRA as well as other members of the research community including faculty, technical officers, and research managers. Of the issues raised, the three which were brought up most consistently are discussed here.

Precarity

We found that the topics of precarity and salaries for ECR were raised in relation to research culture at UCD. Survey and focus group respondents emphasized the need for increased resources to support GRS stipends. The high cost of living in Dublin, particularly for rental accommodation, was viewed as making ECR salaries inadequate. Respondents argued that raising GRS salaries would ultimately benefit academic staff by attracting high-quality research students. Concerns also arose about the precarious nature of PDRA fellowships and their broader consequences. Short-term contracts with strict milestone requirements were listed as a barrier to developing external collaborations, which would benefit the long-term PDRA career as well as the institution.

Focus group participants indicated that precarity was partially mitigated by the considerable training resources offered to ECR at UCD. Training is provided in research and transferable skills for alternative career pathways to all ECR. The availability of masterclasses and workshops through the UCD Library, the Graduate Studies Office, and university research institutes were rated as significant research culture benefits for GRS. Likewise, PDRA reported the opportunities to obtain training through the UCD Postdoctoral Careers Centre as a positive aspect of the environment at UCD. Finally, in response to the Likert-scale survey question 'To what extent do you agree that UCD supports a culture of personal and professional development', more than two-thirds (67%) of GRS and more than half (55%) of PDRA strongly agreed or agreed with this statement (**UCD Research Culture Initiative, 2022a: 9**). Focus group discussion responses aligned with the responses to this survey question, suggesting that participants' qualitative insights mirrored the quantitative findings.

In line with our qualitative findings, job insecurity within academia was one of five key risks to research culture identified by a qualitative study conducted by Wellcome in 2019. Participants in the Wellcome study indicated that objectionable behaviour could be induced by precarious

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employment, with consequences for the entire research ecosystem (**Moran & Wild, 2019**). In the early phase of a research career, temporary contracts have become the norm. The 2018 International Survey of Science found that more than half of researchers under the age of 45 were on fixed-term contracts (**Bello & Galindo-Rueda, 2020**). Nearly a quarter (23%) of ECR responding to the 2023 Culture, Employment, and Development in Academic Research Survey in the UK indicated that their contracts were 12 months or shorter in duration (**CEDARS, 2023**).

Mentoring

UCD survey and focus group participants felt that availability of mentors has been uneven across the organisation, as summarized by the following quote from a survey respondent, 'Mentorship is not guaranteed'. For some, arrangements were *ad hoc*, sometimes leaving junior colleagues at a loss with regard to finding a mentor. Others reported good mentorship programmes in their areas. However, even when mentoring was available, arrangements could seem provisional, suggesting that the conditions of the mentorship lack clarity. Junior staff could feel they were in an untenable position if their mentor-mentee relationship was not functional (e.g., 'I find it unacceptable that so many people just have to put up with working under an unsupportive supervisor just because they don't want to put their degree at jeopardy if they complain').

Focus group participants favoured semi-formal arrangements that required some structure. They also expressed a preference for programmes situated locally in departments rather than at the institutional level to provide flexibility to adapt to departmental culture.

Mentorship training was also identified by survey and focus group participants as being vital for successful mentorship relationships. Training for supervisors of research students has been offered by the UCD Graduate Studies Office since 2012. Complimentary training for research students maps onto supervisor training so that both groups are operating within the same framework of best practice. UCD HR People and Organisation Development also offer mentoring programmes for staff. Research Culture Survey results confirmed the value of mentorship training. Still, it can be difficult to recruit motivated and committed mentors (**Hegstad & Wentling, 2005**; **Weinberg & Lankau, 2011**), and therefore further research into the expectations, benefits, and best practice in mentorship is needed.

To learn more about best practice in mentorship at UCD, our team conducted informal interviews with members of the research community, many of whom have been internally and/or externally recognized for their

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excellence as mentors. The role of the mentor can be varied, but three common points of best practice were raised by those interviewed.

First, the role of the mentor in the professional, but also personal, development of the mentee was a common thread. A good mentor invests in the mentee as a person, helping to develop their outlook as a colleague and collaborator. Every mentee is different so those we interviewed advised getting to know each mentee as an individual to understand how best to offer support. This is an essential type of caring that underpins the most effective mentoring relationships. According to Professor Cormac Taylor in the UCD School of Medicine, one of the rewards of being a mentor is helping someone develop as a person and build not only a career, but a life.

Second, creating a space where people can experiment, flounder, and try again was highlighted as fundamental to the research process and a key role for a mentor. In 2012, the technology company Google initiated Project Aristotle to study characteristics of successful and unsuccessful teams (**Duhigg, 2016**). Psychological safety, or the security to take risks and be vulnerable in front of colleagues (**Edmondson, 1999**), was identified by Google's research as one of the five decisive qualities of highly effective teams. Best practice in mentorship offers support for students and junior colleagues through the full practice of research from failed attempts to success.

Finally, the simple act of listening to a mentee provides valuable support. Experienced mentors advised to simply let the mentee talk. Those we interviewed affirmed that for the most part, mentees know what they need to or want to do; they just need the opportunity to talk it through. As Professor Pat Guiry from the UCD School of Chemistry observed, 'Can't beat a cup of coffee and sitting down with someone'.

Career workshops for GRS or PDRA typically reveal that while the majority of people who obtain doctorates are aiming to have careers in academia, most will not (**The Royal Society, 2010**). Instead, more than half of doctoral researchers move on to work outside the academy in a diverse range of roles (**Arbeit et al., 2021**). The early career period is a crucial time for determining the ultimate career path of researchers and mentoring is thus a critical factor. Participants in Wellcome's workshops indicated that mentoring practice has a significant influence on perceptions of research culture and prospects for a research career (**Moran & Wild, 2019**). Mentors can offer knowledgeable guidance to mentees on the factors that establish an academic identity, such as publications, collaborations, developing a network, and research funding awards (**Schriever & Grainger, 2019**). Success requires vision and strategic planning, qualities which develop through time and experience. It is not realistic to expect an

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ECR to navigate this landscape independently (**Cleary et al., 2017**). Mentorship, then, is a valuable mechanism for training the next generation of researchers and nurturing excellence.

Acknowledgement

In their position paper on recognition systems in research, Science Europe affirmed that the mechanisms for acknowledging research achievement exert 'profound influence over the ways in which research is conceived, conducted, disseminated, communicated, and used…' and thus is 'intrinsically linked to research cultures' (**Science Europe, 2023**). Many UCD ECR survey and focus group participants agreed that praise and acknowledgement is important to counteract the critique and rejection that is part and parcel of a research career. There was a general call for recognising a wider range of research outputs by 'broadening of the definition of research contributions/impact to better capture engagement and outreach', as well as a reduction in emphasis on metric-driven acknowledgements.

In our qualitative study, we found strong support for team-based acknowledgement with particular reference to ECR, as exemplified by the following quote, 'It would be helpful if the University gave greater visibility to research contributions of early career researchers (especially PhD candidates and postdocs)'. Increasing the visibility of research contributions through acknowledgement of 'students' participation in conferences and publications' on the UCD website or with academic profiles was encouraged.

Survey responses linked an increase in stipends and salaries for GRS and PDRA to recognition of the important role that these researchers play in overall University research outputs. A related theme was the perception of many ECR that their status is ambivalent. GRS reported that they would like to be recognised as 'researchers in their own right' and PDRA reported feeling like they fall somewhere in between staff and temporary contractors, with an undefined status.

Insights

The UCD Research strategy states that 'we want every member of our research community to experience a positive culture that clearly values research and an environment that supports them to reach their full potential'. The Research Culture Survey and follow-on focus groups identified at least three challenges for ECR.

The issue of ECR job precarity is multifaceted. Systemic limitations dictate the length of contracts that can be offered and the salary range. In the months following our focus group sessions in the spring of 2022, the topic

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of GRS stipends became a matter of public debate in Ireland with GRSs organising a campaign of protests at the Dail (Irish parliament). The Minister for Further and Higher Education announced a €3000 increase in PhD stipends to €22,000 annually to begin from January 2024 (**Bowers, 2023**). The sector deemed it critical that undertaking a doctorate should be feasible in Ireland in terms of earning a living wage or there is a risk of losing talented ECR. Almost all PDRA and many GRS at UCD are employed through grant funding which is, by its nature, fixed term. Indeed, Research Career Frameworks assume researchers will progress through the GRS and PDRA phases and onto the next stages of a career, within the academic or another sector.

Quality mentoring can facilitate the transition, yet sufficient measures to ensure quality are not yet standard across the University. Mutual understanding of expectations for the mentorship relationship is one key to success. Training in best practice is another. Acknowledgement of the investment in mentoring may be an incentive to recruit more mentors. Benefits of mentoring have not been well studied, and therefore further research on how mentorship facilitates career growth and development for the mentor may be valuable (**Schriever & Grainger, 2019**; **Ragins & Verbos, 2007**).

Acknowledgement of achievements is undeniably vital to the research process. For ECR it has particular significance in that recognition demonstrates present value within the current institution and is a marker of progression to the next career stage.

Conclusion

The early stage of a research career is a critical juncture regardless of discipline. Qualitative analysis of comments made by ECR at UCD revealed three main research culture challenges: precarity, mentoring, and acknowledgement. To navigate these challenges, ECR require guidance and strong mentorship via a network of sources. These challenges are not unique to UCD and are likely reflected more widely across the research ecosystem.

Colleen Thomas holds a doctorate in the History of Art from Trinity College Dublin. Her research interests focus on the monumental sculpture of early medieval Ireland and Britain with particular emphasis on the visual representations of sanctified spaces and their relationships to cosmological time. Her research career has taken a curvy path beginning in industry as an art

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museum professional, then becoming an academic researcher, and at present, a research manager. Since 2021 she has been the project manager for the University College Dublin Research Culture Initiative, supporting one of four pillars of the UCD Research strategy and informing a national conversation on research culture in Ireland.

Dr Sonya Deschênes is a Lecturer/Assistant Professor in the University College Dublin School of Psychology. She obtained her doctoral degree in Psychology from Concordia University in Montreal and conducted her postdoctoral research in mental health epidemiology at McGill University in Montreal. Her research investigates the comorbidity between mental and physical health conditions and the biopsychosocial mechanisms underlying these associations. She is also interested in the psychosocial determinants of both physical and mental health. In 2022, Sonya joined the UCD Research Culture Core Team in hopes to learn more about research culture and contribute to initiatives to improve it.

Grace Mulcahy is Full Professor of Veterinary Microbiology and Parasitology and spent almost 10 years (Jan 2007- Sept 2016) as Dean of Veterinary Medicine at University College Dublin. She leads an active research group focussing on helminth immunobiology, gut microbiota, and One Health. She is a Member of the Royal Irish Academy. In 2019, Professor Mulcahy was appointed UCD's Research Integrity Officer (RIO). UCD's Research Culture initiative arose from the Research Integrity team's conviction of the power of a positive culture to enhance both research integrity and research excellence, reflecting UCD's strategic plan and strong commitment to research culture.

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Adrian Ottewill holds a doctorate from the University of Oxford and is Full Professor Emeritus in the Department of Mathematical Physics at University College Dublin. He is internationally recognised as a leader in research covering numerous aspects of quantum fields in curved space-time and has been involved in the emerging field of gravitational wave astronomy through the National Science Foundation's ground-based LIGO project. Professor Ottewill was the founding director of UCD's Institute for Discovery which supports emerging and early-stage interdisciplinary research. He served as the UCD Deputy Research Integrity Officer and was instrumental in establishing the UCD Research Culture Initiative.

Gillian Boyle holds a Masters in Agricultural Science from University College Dublin, specialising in Soil Science. She spent eleven years working as a researcher, then moved to her current position in the central research office in UCD. She worked as Team lead in the Proposal Support Team for fifteen years, providing advisory and support services to researchers submitting research proposals. Her current role includes research policy development and implementation, and she provides support to the Research Integrity office. She was involved in the instigation of the UCD Research Culture Initiative in 2021 and continues to be an active team member in this project.
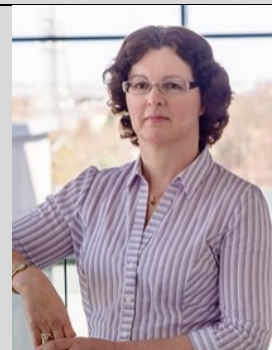
Charles Ivar McGrath is Professor in the School of History, University College Dublin. He received a BA (1989) and an MA (1992) from University College Dublin and a PhD (1997) from the University of London. Professor McGrath is a leading and internationally recognised expert in eighteenth-century Irish and British history, with a particular specialisation in political, financial, legislative, religious, military, and intellectual history. Outside of academia, he spent three years serving as a private soldier in the Irish army including six months with UNIFIL in 1984-5, and eighteenth months in the civil service in London in 1992-3. In 2022, Dr McGrath joined the UCD Research Culture team.

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Maura is an Adjunct Professor at University College Dublin and a former senior manager at the Health Research Board Ireland. She has been actively involved in advancing research integrity policy for many years, serving in various leadership roles such as Treasurer of the World Conference on RI Foundation Board and Co-chair of the 8th WCRI. Maura is also Chair of the ALLEA Permanent Working Group on Science and Ethics and has co-authored the ALLEA European Code of Conduct for RI 2017 and 2023. Additionally, she sits on several EU Policy and Stakeholder Advisory Boards for EU projects that research RI and ethics issues.

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