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The professional learning of academic researchers through their career

Yuveena Gopalan [a,b], Simon Buckingham Shum [a] and David Boud [c,d]

[a]Connected Intelligence Centre, University of Technology Sydney, Sydney, Australia; [b]Research Office, University of Technology Sydney, Sydney, Australia; [c]Faculty of Arts and Social Sciences, University of Technology Sydney, Sydney, Australia; [d]Centre for Research in Assessment and Digital Learning, Deakin University, Melbourne, Australia

ABSTRACT

Professional development is necessary to sustain continual learning in any workforce, including academic researchers. However, researcher development strategies and support have been largely informed through institutional strategies, often conceived and deployed without the active participation of researchers. Several studies recognise the limitations of this approach and argue for the importance of understanding researchers' perspectives on their learning. With an international focus, this paper examines ways in which leading researchers develop in becoming better researchers. Its distinctive contribution is to provide evidence of how academic researchers talk about their own learning, how it is conducted and what they have found effective in their careers. The paper reports the findings of a study that involved interviewing leading international researchers at three different career stages (early, mid and senior) in two fields. Four main themes were identified from the research: *establishing expertise*, *pursuing passion*, *coping with challenge and change*, and *building belonging*, with an overarching interrelationship between social and personal dimensions to learning. The findings are in line with workplace learning theories, and evidence: academic researchers, like other professions, learn predominantly through informal, unstructured and social means and are contingent on practice needs. While this alignment with our current understanding of professional learning might seem unremarkable, it has practical implications for supporting researcher development. Evidence-based approaches to examining researchers' continued professional learning and development could promote researcher engagement and support institutional efforts to promote learning at both personal and community levels.

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Researcher development; researcher perspectives; professional learning; workplace learning; informal learning

Introduction

Professional development is necessary to sustain continual learning in any workforce, including academic researchers. However, our understanding of the ways in which researchers learn and develop in their career has developed surprisingly little since the introduction of the academic researcher development program in the 1970s (Åkerlind 2005; Evans 2024). Particular attention has been given to establishing developmental plans with the aim of supporting early career researchers (ECRs), research

CONTACT Yuveena Gopalan Yuveena.Gopalan@uts.edu.au Connected Intelligence Centre, City Campus, Tower Building 1 Level 27, Room 27.027, 15 Broadway, Ultimo NSW NSW 2007, Australia

students (Sutherland 2018), and advancing scholarship of teaching and learning (Evans 2024) to meet growing education reform demands (Patfield, Gore, and Harris 2023). An area that is under-researched, and which could serve to enrich our understanding of how to better support researchers, is how researchers account for their own learning at different career stages.

Building and sustaining a successful career in academia is complex. Academic researchers need to stay current and informed on emerging knowledge in their fields, obtain funding, publish quality work, establish and sustain national and international collaborations, and adapt to changing expectations. Researcher performance and career trajectories are both incentivised and constrained by institutional frameworks, national policies and international metrics. The nature of academic research work presents inherent challenges to providing appropriate support for this constituency of specialised professionals in developing their career (Irvine and Billot 2016). Moreover, institutional strategies that inform key developmental focus areas, could benefit from integrating various dimensions of academic professionalism (Evans 2024). Thus, engaging with academics to understand their needs should help identify the kinds of support they most value, and inform institutional conceptions of, and approaches to, researcher development.

The ways in which researchers conceptualise their professional learning, and enact this in their careers, remain surprisingly under-researched, except for a few notable studies. Only a small number of researchers have documented how academics think of and experience their own development (Åkerlind 2005; Åkerlind 2008a; Åkerlind 2008b; Evans 2011). Understanding researchers' perspectives on how they perceive, approach, prioritise and undertake development activities can reveal their motivations, mindsets, beliefs and willingness to adapt to changes (Åkerlind 2008b; Santos and Horta 2020). In addition, involving academics can provide information on ways in which they interpret and orient themselves to workplace conditions, influences and opportunities (Brew et al. 2017).

This paper investigates the perspectives of academic researchers, at different career stages, on ways in which they have developed as researchers. Its distinctive contribution is in investigating ways in which successful researchers talk about their own learning and what they have found effective. Before introducing details of the qualitative study, we first describe workplace professional learning and researcher perspectives on research. We then present key themes resulting from analysing interview data with 24 highly published researchers, selected to represent career stage, gender and discipline, before discussing our findings in relation to workplace learning theories and previous studies on academics' perspectives.

Background

Workplace/professional learning

Developing as a researcher, as with most professionals, involves a mix of formal and informal learning. The literature on workplace/professional learning suggests that while training courses can contribute, once qualified, most professionals learn predominantly through informal means by engaging in situated, practice-based learning activities and through social interactions with their professional community (Eraut 2004). They build up specialised skills through accepting new challenges, and through direct and indirect engagement with peers and other practitioners (Boud and Brew 2013; Littlejohn 2017; Littlejohn et al. 2019), engaging in project or task dependent adhoc learning (de Laat and Schreurs 2013; Ruiz-Calleja et al. 2021). They learn by connecting professionally, contributing and acquiring knowledge collectively (Littlejohn, Margaryan, and Milligan 2012; Marsick and Watkins 2015). Through 'legitimate peripheral participation' (Lave and Wenger 1991), newcomers are gradually enculturated and validated as they play increasingly productive roles in a community of practice, eventually mentoring others.

Since workplace learning is predominantly informal and rooted in experience, it provides scope for enhancing learner agency through drawing on personal experiences and shared social learning

activities (Eraut 2004). For Goller and Paloniemi (2022), agency can be used to understand how professionals learn, which extends to personal and social influences, including engagement with available resources. Furthermore, critical reflectivity can enhance informal and incidental learning (Marsick and Watkins 2001) – reflecting, examining and analysing practices and assumptions in a conscious manner. For Littlejohn, Margaryan, and Milligan (2012), learning at the workplace is contingent upon one's disposition to direct learning through action, agency and motivation. Therefore, the ability of professionals to self-regulate their learning is essential for progressing and developing at work. This paper discusses whether researchers learn in similar ways to how other professionals learn.

Researcher perspectives on research

A limited amount of research illuminates the ways in which academics understand research and become a researcher. Literature in this area has grown mainly from the perspectives and needs of institutions, and national and governmental policies, following the introduction of academic development in the 1970s. This resulted from the higher education sectors' response in addressing concerns around institutional performance evaluation and accountability, and the quality of teaching due to poor student performance and growing economic limitations and demands (Åkerlind 2005). The literature on academic development has subsequently started to expand to focus on demonstrating academic and institutional research performance including quantity and quality of research, breadth of impact and collaborations towards fulfilling increasing national and governmental assessments and funding requirements (Brew et al. 2016). Therefore, institutional managers and leaders view academic development as a form of workplace orientation (Ragupathi 2021), a mechanism to improve the quality of supervision and student outcomes (Patfield, Gore, and Harris 2023), and to enhance research performance (Brew et al. 2016; Evans 2012).[1] A few notable studies have attempted to understand academics' perspectives on how they experience research (Brew 2001), develop as a university researcher (Åkerlind 2008b; Brew et al. 2017), and define researcher development (Evans 2011).

We first explore Brew's study, which focusses on examining several common assumptions about the nature of research and addresses the lack of empirical studies on the ways in which research is conceptualised and experienced by researchers (Brew 2001). This is important, since the way that a researcher thinks about their research influences their learning. The study introduces a framework of four conceptions identified as 'domino' (focus on solving research questions or problems), 'trading' (utilising research outputs to connect and gain recognition from other researchers), 'layer' (uncovering or linking underlying meaning in research), and 'journey' (personal discovery and transformation) derived from a phenomenographic study of senior researchers. Brew showed that conceptions can occur at various career stages, and with specific researcher intentions presented as product/external and personal/internal orientation. Later career stages saw a greater occurrence of internal orientation and focus on researchers themselves. In addition, the findings contradicted assumptions that conceptions of research are discipline dependent. We find that while this work offers insights into ways in which research is understood, its focus is not on academic learning and development.

We next consider Åkerlind's study on variations in academics' experiences of their growth and development at different career stages. This study bridges the gap between the diverse developmental needs of conducting research and its significance for academics, providing insights into advancing researcher development and highlighting both its processes and outcomes. The findings summarised four distinct categories, namely, 'becoming confident', 'becoming recognised', 'becoming more productive' and 'becoming more sophisticated' (Åkerlind 2008a, 2008b). These studies found that academics tend to engage in aspects of development that contribute to their immediate circumstances, whether improving personal academic performance and learning, or seeking broader disciplinary/societal impact. This form of orientation is comparable with Brew. Moreover, variations in the ways in which academics understand their development was not influenced by career stage, with comparable differences between teaching and research-focused academics. The study

emphasises the need for a more comprehensive understanding of ongoing academic development, one that includes ongoing qualitative improvements beyond the early stage in their career.

Consequently, we turn to Evans (2011) work, which aims to extend and define the field of academic development. Her motivation stems from the view that academic development has too narrow a focus on teaching and lacks a clear definition. Thus, she calls for a more holistic approach that extends beyond teaching and defines academic development 'as the process whereby academics' professionalism may be considered to be enhanced' (Evans 2024). She regards researcher development to be a sequence of micro-development events (Evans 2011) and elaborates professionalism as 'description of people's "mode of being" in a work context, or of how they "go about" their work' (Evans 2024). Professionalism encompasses practitioners' action, methods and reasoning in acquiring knowledge, their attitudes, and behavioural codes including purposes and quality. Evans (2011) conceptual model therefore deconstructs researcher development into three componential structures: behavioural, attitudinal and intellectual development. The behavioural component is associated with the physical – activities pertaining to conducting research including increasing capacity in managing research process, skills and research output. Attitudinal (relates to personal views and identity, beliefs and motivation) and intellectual components relate to mental activities (development of knowledge and application of reasoning to research practice). The model suggests that effective researcher development should address all three areas to ensure well-rounded growth and improvement. The need for adopting an inclusive approach is echoed by Fussy (2025), who highlights integrating individual and institutional factors in supporting research capacity and development.

To summarise, while Åkerlind and Brew present fascinating accounts of the ways in which researchers conceive their research, the focus has not been on researchers' *learning*. In contrast, Evans illustrates a focus on learning as incremental micro-level development episodes. Our research responds to Evans (2024) call for conceptions of academic development to expand to include researcher development. Our study focusses on actions, methods, attitudes and reasoning which lead researchers to become better researchers (Evans 2024). Consequently, the research question investigated in this paper is: '*How do highly published researchers at different career stages engage in personal learning and development?*' In the section below, we present details of the study's design and method'.

Methodology

Interview design

A qualitative research approach was undertaken to understand how researchers navigated learning in their careers to become better researchers. This project was given full approval by University of Technology Sydney. This is an initial study limited to two disciplinary areas, and it is to be noted that the results and conclusions are not generalised beyond the areas examined. Semi-structured interviews (see Appendix 1) were conducted to capture narrations of both real-life experience and reflection of interviewees own progress and career journey on:

- how researchers learnt and progressed in their careers;
- the ways in which researchers responded to external developments;
- key experiences or advice to help others progress in their careers.

Interviews were recorded online via Teams/Zoom for approximately 60 min, between November 2022 and April 2023. Participants were provided with details of the study and signed a consent form prior to the interview. Participant details were anonymised and any recognisable details such as institutions, countries and names were de-identified. Transcripts were shared with interviewees for verification, prior to analysis.

Research participants

Our goal was to recruit 24 successful academic researchers to interview for the study, balanced across career stage, gender and research field. We selected number of publications as a proxy for research competence and success. While all proxies have limitations, publications in citation indexed journals reflect a researcher's ability to contribute to the field at a suitable level, often reporting outcomes that entail competence in other proxies such as funding, collaboration and PhD students. Participants were selected from a list of highly published researchers ranked in the top 200 in Elsevier's *Scopus* database[2] 'Researcher Discovery' tab (Figure 1), within two disciplinary fields. The Scopus database was selected as it produced a more accurate list of researchers compared to another bibliographic database, Digital Science's *Dimensions*.[3] Stratified sampling of participants was conducted across:

- *Gender*: male and female
- *Career stage*:
  - Early Career Researchers (ECR): within 10 years completing PhD,
  - Mid-Career Researchers (MCR): 11–20 years since completing PhD,
  - Senior Career Researchers (SCR): >20 years since completing PhD
- *Disciplinary field*: 'Learning Analytics' (LA: a young field, whose origins are around 2011), and 'Higher Education and Assessment' (HE: a more established field). These fields correspond to authors 2 and 3's disciplinary areas, thus we were able to validate the list of participants as

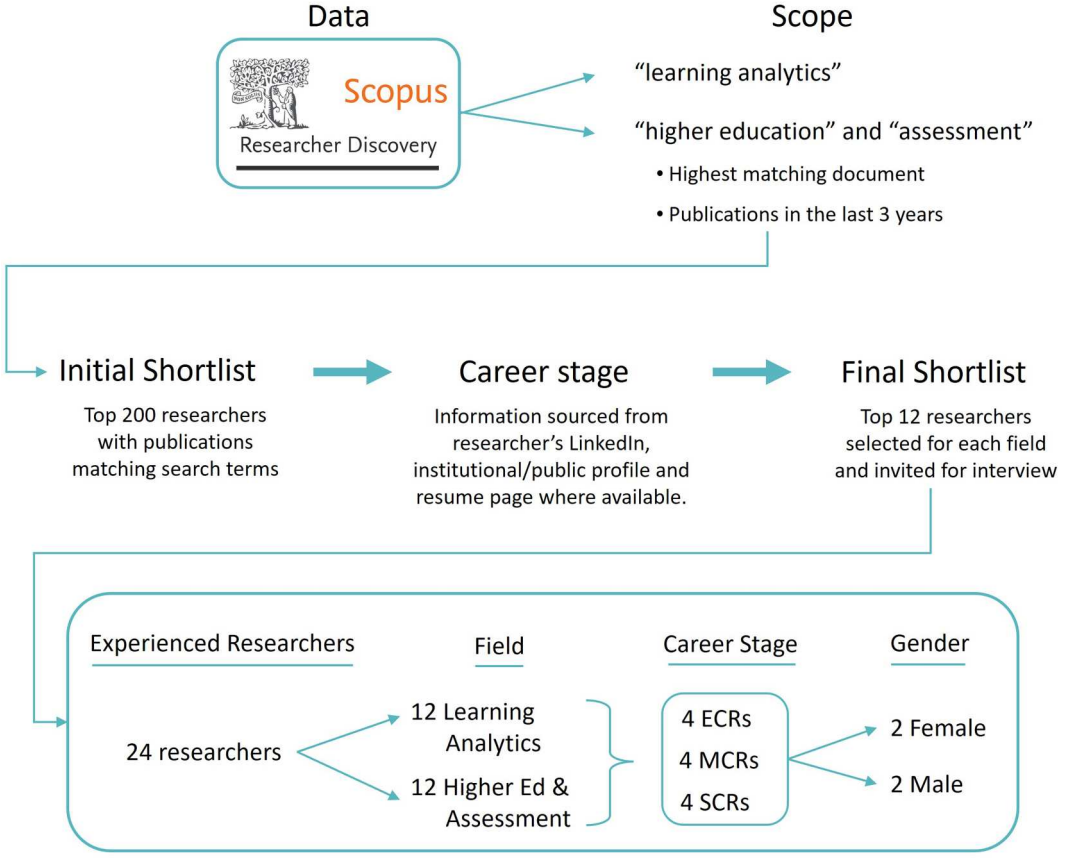

Figure 1. Research participant selection method and participant characteristics.

genuinely active in the field (e.g. some candidates were no longer active or were highly published in related fields).

The final sample comprised 24 participants from Asia (HE:2; LA:3), United States (HE:0; LA:1), Australasia (HE:5; LA:2) and Europe (HE:5; LA:6). We initially started with a list of 200 authors for each disciplinary field using Scopus Researcher Discovery tab. This number was reduced to 81 for HE and 136 for LA, as authors that did not closely align with the disciplines selected for the study were excluded. Following which, a total of 34 participants were contacted (HE:19, LA:15). If they declined/failed to respond the next eligible researcher in the ranking was invited. We include ECRs as part of our research participants, as the cohort is within the list of top 200 highly published researchers in their respective fields, demonstrating high competence levels at the start of their careers.

Qualitative coding

Since research in the area is sparse, we adopted an inductive Reflexive Thematic Analysis (RTA) approach (Braun and Clarke 2006) with an interpretivist lens, which allowed for the construction of themes informed by the interview material, rather than being restricted to pre-defined themes. The analysis of transcripts followed the six-phase iterative RTA analytical process as described by Braun and Clarke (2006, 2021). An initial set of codes was developed by focusing on gaining a contextual understanding of researchers' development experiences as prompted by the interview questions. The final coding was reviewed by all authors and any differences in interpretation were resolved through discussion. The framework from Srivastava and Hopwood (2009) provided guidance in the form of three iterative questions as a form of continuous meaning-making during the coding process: '*what is the data telling me?*', '*what is it that I want to know?*', and '*what is the dialectic relationship between the two?*'

Qualitative analysis of themes

Four primary themes were constructed from the inductive RTA: 'Establishing expertise', 'Pursuing passion', 'Coping with challenge and change' and 'Building belonging', each comprising 2–4 subthemes (Figure 2). It will become clear that the themes are connected, not mutually exclusive, with participants often mentioning multiple themes together in their responses. For instance, although the primary purpose of publishing is to 'establish expertise', typically linked to pursuing one's passion, this naturally also 'builds belonging' within that community. Overcoming publication rejection and negative feedback is associated with the ability to 'cope with challenge and change', with researchers calling on their professional contacts for support.

Nonetheless, while recognising the interwoven nature of these themes, our coding does still justify these four overarching themes as the most meaningful way to make sense of researchers' responses. We now introduce each theme, illustrated by interview quotes (some of which have been edited for clarity without changing the substance).

Establishing expertise

This theme reflects the ways in which researchers develop their expertise and establish themselves as a researcher (Figure 3).

'Building identity and reputation' has both an internal (self) and external (peer/community) focus. Respondents emphasised the need to be self-aware and understand the unique contributions and skillset that they bring to a field (internal), which is instrumental in building their identities and positioning themselves within a community (external). Respondents spoke of

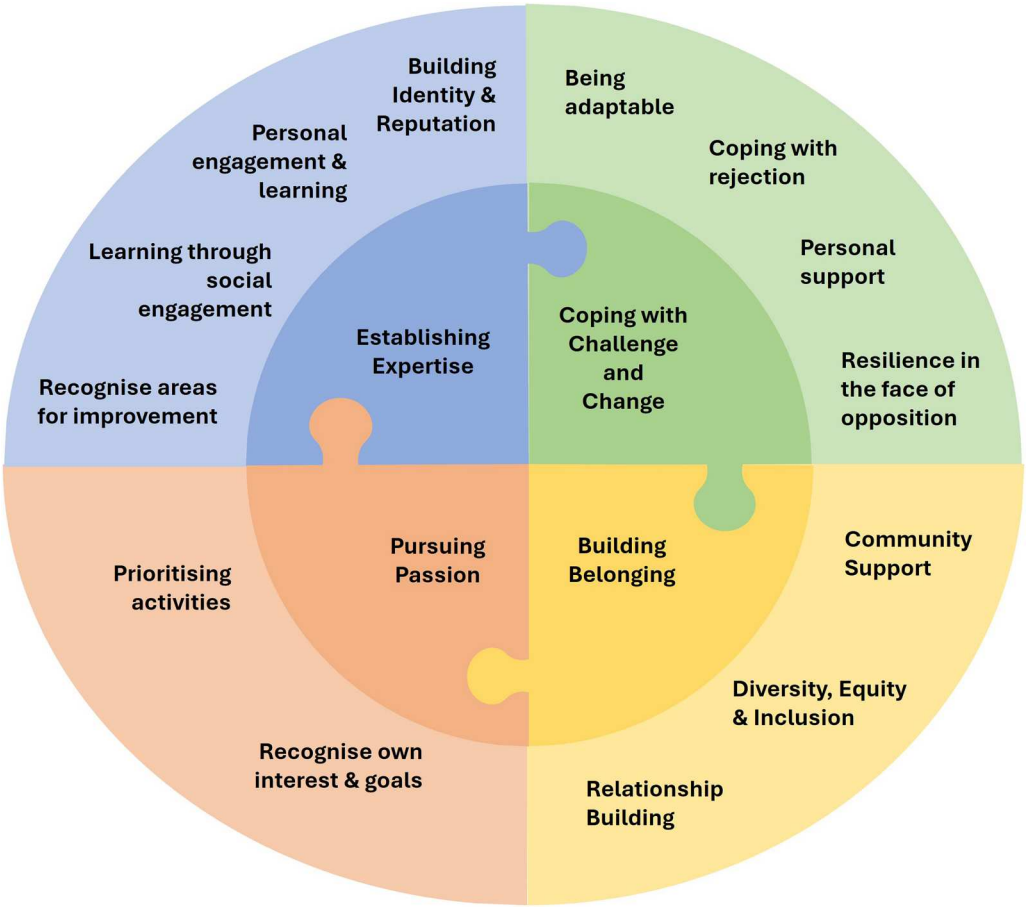

Figure 2. How researchers learn: key themes and sub-themes.

finding their niche and positioning themselves in areas where they could add value. This involved self-reflection in understanding their distinctive skillsets, their perceived identity (that is, ways in which peers and community saw them as researchers), and the ways they could contribute personally and/or areas where peers could add value. They achieved this by

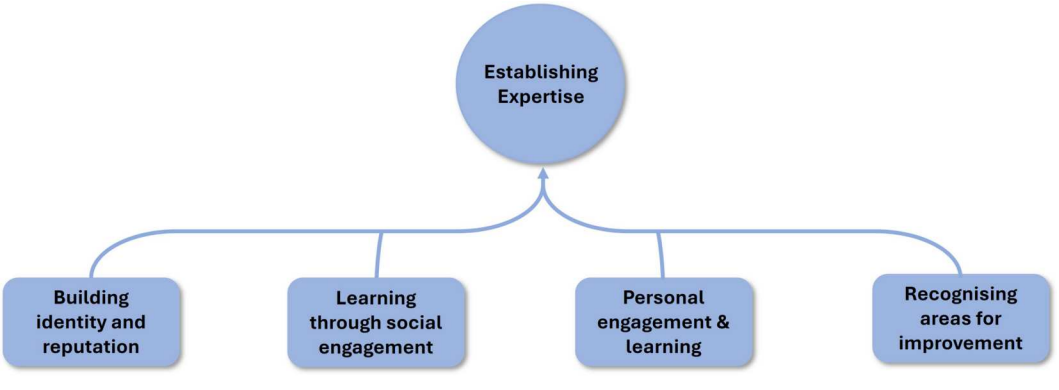

Figure 3. Establishing expertise sub-themes.

aligning with experts and communities in their area of interest, articulating their own identity, understanding the contribution and impact of their research, and building visibility by attending events and developing media and web presence. They also learned and developed by emulating mentors and experts, building international networks, adopting leadership roles and publishing beyond supervisor/mentor networks, and focusing on the application or translation of research to the wider community:

> I can see that bigger picture, and I sort of think about people like Person Q, […] he's got an amazing view of some part of this, but there's a bit of it that he doesn't do and same for me. I don't do the statistical stuff that he can do. So, what can you do and see, and where's your expertise sit? And how is that unique or distinctive, or unusual, or rare […]? (HE-SCR-F1)[4]

> You know, in [Country A] higher education is an interesting paradigm, but I was looking for a space that was smaller […]. [Country A] Higher Ed is an ocean and I was looking for a lake or a big pond and [Country B] is that, and so there was a strategic element in doing that. (HE-MCR-M2)

Interviewees learnt and gained knowledge predominantly through *social engagement*. Peer engagement supported further development of research ideas and gaining feedback. Engagement with other researchers provided space for creativity, prompted the generation of new ideas, helped track emerging research trends, and facilitated collaboration with researchers with complementary skills. In addition, such engagement provided opportunities to observe how other researchers approached a topic and interacted with collaborators. Researchers engaged peers by attending events, visiting institutions, co-creating research through joint publications/projects and forming apprenticeship-type relationships:

> […] there's several ways I think working with other people helps us to generate better research questions, because perhaps we're more aware of different contexts, and that illuminates new things about our context […] (HE-SCR-F2)

> The moment you speak to somebody else, you also start to realize the extent to which the ideas you are talking about are good or not […] the joint construction of ideas actually are improving and perfecting these ideas, and you are getting so much more improved research that becomes far more relevant. (LA-SCR-M2)

The sub-theme *personal engagement and learning* similarly has a focus on researchers gaining and building their knowledge, however, this process is undertaken personally mainly through practice-based learning pursuits. Researchers engaged in acquiring and staying current on knowledge of the research landscape including methodology:

> There should be an effort in trying to know what the key conferences, books and journals about the specific topic are that you want to research. It is very relevant looking for previous work […] (LA-MCR-M1)

The process of developing one's knowledge also extends to *recognising areas for improvement*. Introspection on areas that would benefit from further development, and periodically reflecting on their learnings and the ways in which they have improved:

> I think the first thing that I find most important is being able to continually learn on my own. So, working out what my weaknesses are. When I was a student, I didn't really understand what my weaknesses were. I didn't have enough knowledge to understand that. But now, I can maybe understand to a better degree […] (LA-MCR-M02)

Pursuing passion

This theme relates to the importance that interviewees placed on understanding their own passions and motivations, which help inform decisions pertaining to research pathways and tasks undertaken (Figure 4).

A passion for their area of research drives interviewees to build expertise and identity within their disciplinary fields, thereby fostering the development of personal agency. Furthermore, being

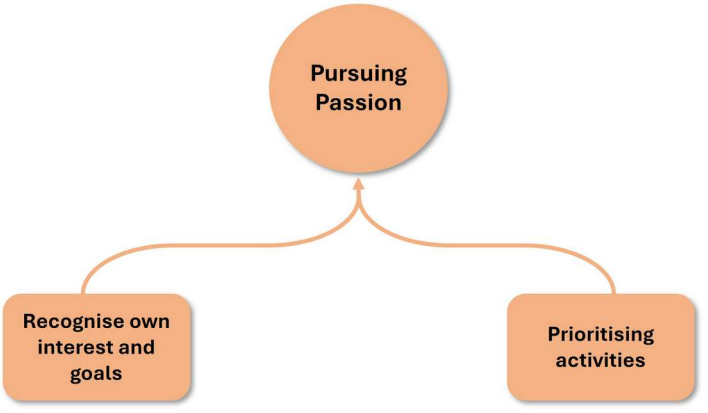

Figure 4. Pursuing passion sub-themes.

intrinsically motivated encouraged interviewees in finding ways to pursue their goals even when faced with challenges (explored in the next theme):

> To do research properly, you do have to do the things that you really enjoy doing. You do have to have an inner desire for it, which has never left me, and that's probably the most important thing to prioritize […] following that passion, because the passion is really important for being a successful researcher (HE-SCR-M2)

> When it comes to research. I think my main motivation here is, am I passionate about this topic? […] Do I think this is an important problem that I want to work on actually. Can I feel myself get excited about it? […] also thinking would this be beneficial […] for me in my career in the long term (LA-ECR-F1)

Consequently, an important skill was being selective with prioritising and investing time in activities aligned with personal goals. Given the need to work simultaneously on numerous projects, careful prioritisation opened greater opportunities to pursue activities that advanced rather than distracted from their passion and career goals. Several respondents also spoke about being flexible in determining their research/teaching/administration allocation, as they could then allocate more time in pursuing priority areas. These respondents commented on the importance of this since research often encroaches on personal time:

> Being willing to say no as much as to say yes as well. I think if you want to take advantage of the opportunities that are gonna be really valuable, you've got to also learn to say no, […] being a bit selective and trying to think about what's gonna be the most valuable thing for me to invest time in. (HE-SR-F2)

> Most research gets done in people's personal life, at the expense of their social life. So, if you want to have a life, you have to defend your time from administration duties and worthy but low priority things. […] (HE-SCR-M1)

Coping with challenge and change

This theme concerns the ways in which researchers adapted to changes in their environment (Figure 5).

Researchers spoke about reinventing themselves in various ways, from taking on a new role or acquiring new skills, to more drastic steps such as changing fields or moving to a new country. The need to reinvent oneself could arise from academic drivers (e.g. recognising growing interest in a new area, opportunities to better position oneself, building experience), and/or personal life (e.g. the need to maintain employment, or family and personal circumstances). Being adaptable was perceived as important, to evolve with their research fields and continue growing as a researcher. Following a rigid development plan was seen as limiting and could create setbacks in a career in research:

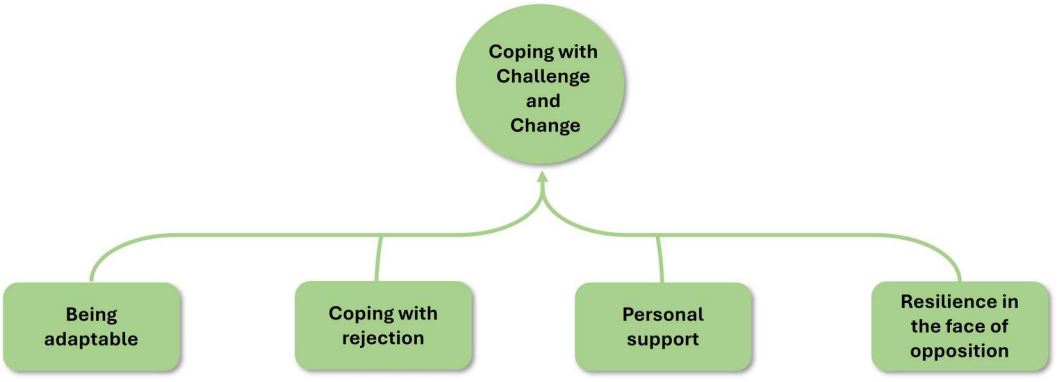

Figure 5. Coping with challenge and change sub-themes.

> If you're too bound by your plans, then you are going to miss out on many other important opportunities, […] many things will change within the period of five years. Like, […] the big hype about Generative AI and ChatGPT. A year ago, that didn't exist […] it's good to have aspirations where you wanna be, but having too strong plans I think potentially crippling rather than beneficial. (LA-SCR-M2)

In addition to being adaptable, respondents also emphasised the importance of persevering through difficult situations, when experiencing rejections, pushback or being undervalued in developing their career. Some spoke about persistence and commitment despite finding themselves in unsupportive environments. They were resourceful and thought of different ways in which they could achieve their goals under non-ideal conditions, such as leveraging wider networks or acquiring resources:

> I was in [Country C] through my postdoc, which really didn't have a proper PhD program. That would basically potentially limit me, but I managed to have PhD students by collaborating closely with another colleague in another university. (LA-SCR-M2)

> I got a lot of criticism […] why would you leave your disciplinary home and move to this area. But it was definitely the right thing to do. […] there are people who completely knocked my confidence. Being willing to push back against these difficult people who have opinions about what you should be doing and trusting your feelings about what you want to do as a researcher. (HE-SCR-F2)

Furthermore, respondents, especially at mid and senior career stages, practiced reframing rejections as learning opportunities. They spoke about sharing rejections and negative feedback as this could help peers and junior researchers view such experiences constructively towards developing their expertise. Institutional support in practising grant writing had facilitated building confidence. They also expressed the importance of taking care of their own wellbeing. Much patience and personal resilience were needed in developing as a researcher, as research tasks and activities were time-consuming and demanding. Therefore, creating and being in a supportive environment, and taking measures to have some form of work life balance is important:

> Feeling as comfortable as you can be with rejection because it's going to happen and reframing it and saying it's gonna make you a better researcher. I often share the example of that educational paper which is probably the one that I'm best known for, and it won awards. […] So, peer review can be frustrating, but it's a mechanism for improvement. (HE-SCR-F2)

> The most important support is yourself, because career development is long term, is not like 1 day or 2 day you can evaluate right? […] it will last for your whole life […]. So, I think developing a strong mindset of yourself is very important and critical (LA-ECR-F2)

Building belonging

This theme focuses on how researchers created and derived support from the wider research community in creating a conducive environment for their development (Figure 6). This links with

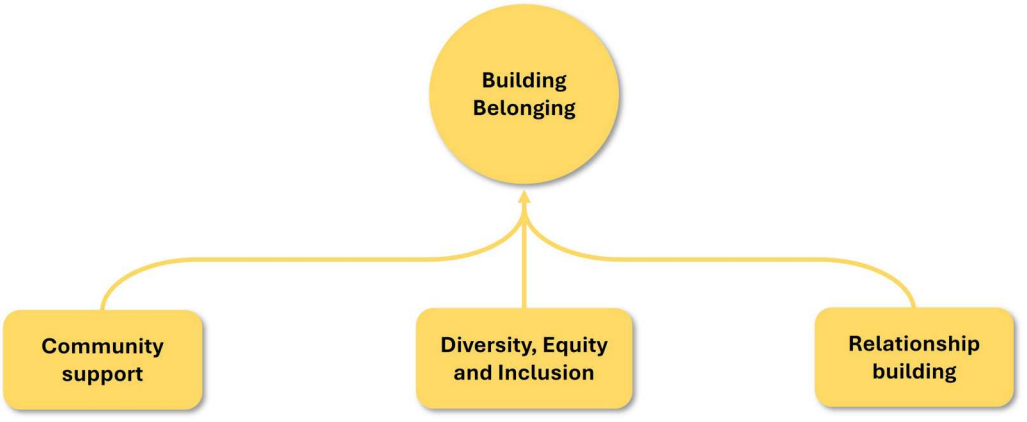

Figure 6. Building belonging sub-themes.

establishing expertise due to the importance of peer engagement, and with *challenge and change* since positive peer interactions could support coping with adversities.

Consequently, respondents emphasised the ability to recognise and create opportunities in developing and sustaining connections. They also sought to identify like-minded researchers to work with, including engaging with researchers to familiarise themselves with other academic communities' culture, and make judgements about good and difficult collaborators. The emphasis is on reciprocal relationship building. Maintaining a good relationship necessitates engaging peers with respect and being prepared to co-operate in mutually beneficial manner:

> Seeking out your research friends, […]. It's like with those people, it's what comes out is more than just the sum of having two people working together, it's not just additive, there's something transformative about it. (HE-SCR-F2)

> […] usually we have a group of some PhD cohort, when we're in the same room, usually in the same office and peers probably is compared to supervisors, but more available when you need help. As you want to approach supervisor, you have to make appointments. […] So, if you talk to peers sometimes you just talk during lunch time, during break and then you can have your idea better shaped, and […] resume your literature reading, then this kind of cycling will go faster than you talk to supervisor (HE-ECR-F2)

Positive mentorship relationships were mentioned as an important and integral part of development. Both those who had received good mentorship, and those that had not, recognised the value in learning from and emulating experts. Mentorship was held in high regard and was the first form of relationship that prompted a sense of belonging, which for many began as a PhD student with their supervisors. Positive mentorship relationships tended to continue past early career stage, helping shape subsequent career decisions, and inspired researchers themselves to become mentors. Mentors did more than impart knowledge; they provided supportive professional development advice and could help make introductions to key researchers. Mentor input was crucial since respondents noted that they did not always understand the different paths available, or have confidence in reaching out directly to others, especially more senior figures in the field:

> I wouldn't be where I am now without some amazing academic mentors […]. When you find those people who might be willing to mentor you, respect them and […] make it reciprocal. If you try and make their lives easier as well, they're going to want to keep you around, and they're gonna want to recommend you to other people, they gonna open doors for you. (HE-MCR-F1)

> So this is an important one, mentorship. […] there were two people there, Person H and Person T. […] I just threw myself at their feet and said please teach me. And you know, in return I offered some value addedness, they needed some professional development work done here or there. I made sure there was a sufficient quid pro quo when it came time to do authorship. […] and we co-authored some very successful papers. (HE-MCR-M2)

Valuable as mentors were, we found that interviewees made the effort to position themselves, and/or create favourable conditions, to increase the likelihood of serendipitous encounters. Although some attributed these opportunities to chance, they reflected on the importance of attending key events to develop such connections, which in turn led to activities that increased their visibility. These actions can improve chances of receiving favourable collaborative responses from within and outside their immediate research community:

> Sometimes I would be frustrated in a certain environment, […] and share it with colleagues who would eventually link that information with somebody else, and all of a sudden, your environment becomes much better. So many of these things actually have a potentially lasting positive effect (LA-SCR-M2)

> [Institutional professional development hub] is designed to help scholars at less well-resourced institutions have various professional development opportunities. So, I would say about half the attendees, […] are from my institution and half of them are from many other much smaller, less well-resourced institutions and there's a heavy focus on equity. (LA-SCR-F1)

Some interviewees described the effects of specific forms of discrimination, especially in the gendered space. An interesting observation was that while some male researchers recognised their gender privilege, and spoke about the challenges female colleagues faced, only a few female researchers raised this. This included taking a longer time to gain the same level of achievements compared to a male researcher due to family and child caring duties. They also spoke about cultural expectations of women in a community dominated by males, such as asking for support not being regarded as important and feeling not accepted as part of a community. Furthermore, an interviewee noted that a lack of female and diverse leadership in an institution can be construed as a form of subtle discrimination. An interviewee did note that they gained valuable advice through mentorship with a senior female academic, as they were able to draw from personal experiences and better relate on issues and challenges faced.

> And I think it's worth carrying forward the conversation into a gendered space, […] because I think, especially in some cultures […] women are often acculturated to be more passive. […] But when you get that kind of scenario, it disadvantages women and also sometimes it may make people respond differently if a woman comes and knocks on a door and says I want to be mentored. (HE-MCR-M2)

> I was the very first female academic in the department. […] I was the only female academic until 2020. […] I have never experienced sexism directly […] but there are some subtle ways, like for example if you look at the management […] at the higher levels, they're all from English speaking background […]. So, you know that probably tells something. (LA-SCR-F2)

In the next section, we examine demographic differences occurring within these themes.

Quantitative analysis of thematic difference by demographic

In this section, we explore salient differences/similarities between groups in the ways in which researchers spoke. Sample size and number of comments made are too small to make statistical claims but may be useful in suggesting directions for future analysis.

The most salient feature in Figure 7 is that regardless of discipline, gender and career stage, researchers spoke more than twice as much about *Establishing your expertise* (Theme 1) compared with other themes. The sub-themes are not graphed in Figure 7, but researchers from both disciplines commented most on *1.4 Recognising areas for improvement* (LA: 86, HE: 82). Analysis by gender revealed that male and female researchers spoke similarly across all sub-themes except for *1.4 Recognising areas for improvement*, where females spoke much more than males (F: 104, M: 64) on training aspects that were deemed to be helpful and missing. With respect to career stage, the most salient difference is that SCRs made many more comments about *1.3 Learning through social engagement* (ECR: 38, MCR: 37, SCR: 57). They spoke almost twice as much on engaging with other researchers to broaden their own research perspectives.

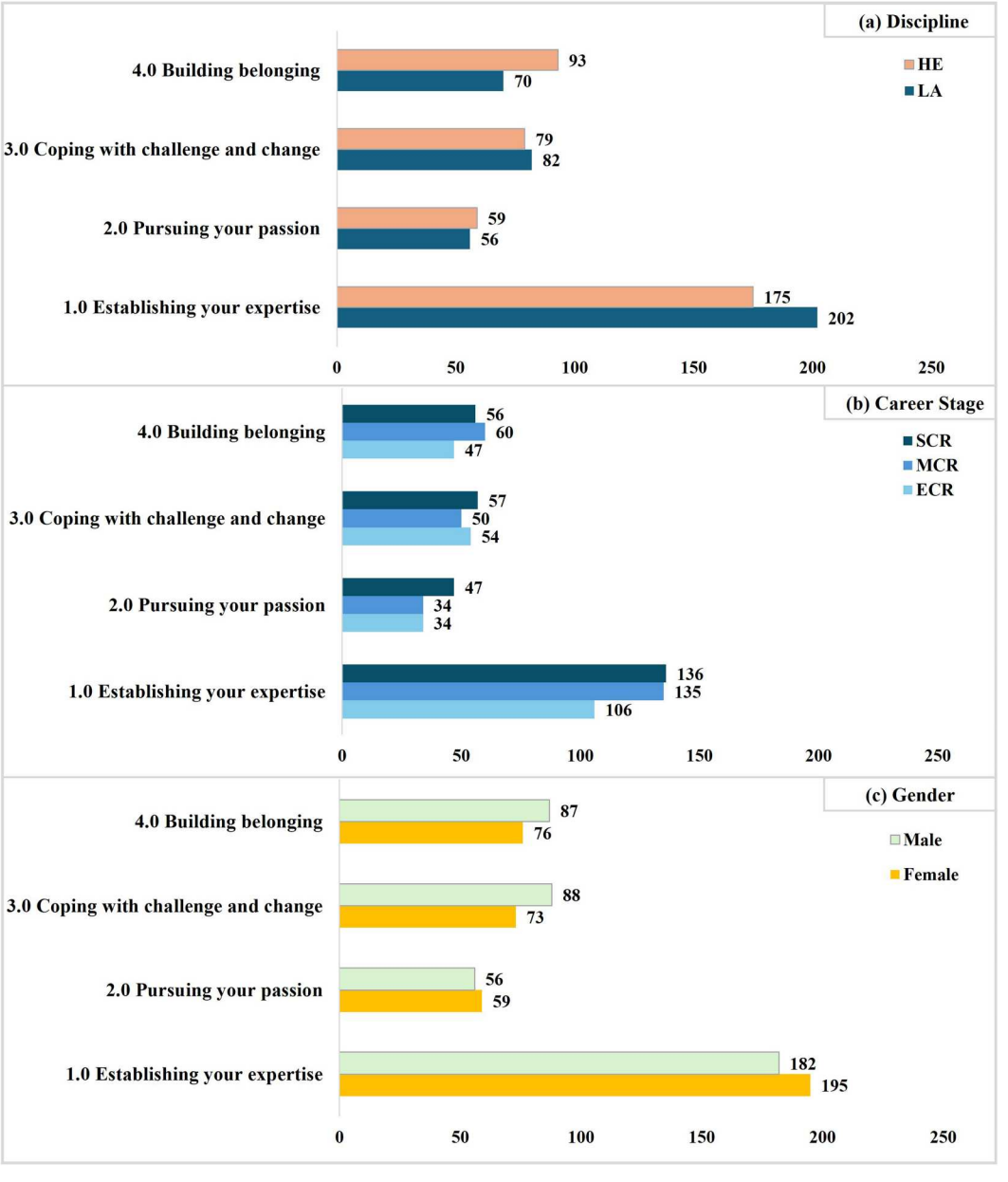

Figure 7. Number of code occurrences for the four overarching themes, by discipline (a), career stage (b) and gender (c).

For Theme 2, senior researchers placed higher emphasise on *2.1 Prioritising activities* (ECR: 16, MCR: 9, SCR: 27). They spoke largely on prioritising activities that add value, and being flexible with task allocation, as it could be supportive to career development and blocking time to engage with research and development resources.

Under theme *3 Coping with challenge and change*, female researchers spoke twice as often on *3.1 Personal support* (F: 23 vs M: 11) with comments focused on taking care of personal wellbeing, motivation and deriving support from family. In contrast, males spoke twice as much about *3.3 Coping with rejection* (M: 29 vs F: 15), particularly on constructively reframing negative publication and funding reviews, and non-responses on collaboration opportunities.

Lastly, for Theme *4 Building belonging*, HE researchers commented more than LA researchers on *4.1 Community support* (LA: 35; HE: 54). They spoke twice as much on gaining professional development support particularly in the form of advice and opportunities to engage in activities that facilitated development from their mentors. In addition, only HE researchers spoke of gaining support from a person in an influential position in their institution.

Discussion

This paper has examined how accomplished academic researchers (as judged by the proxy indicator of successfully publishing), at different career stages (ECR, MCS, SCR) spoke specifically about *learning to become better researchers*. The four overarching themes in their interview responses – *establishing expertise*, *pursuing passion*, *coping with challenge and change*, and *building belonging* – illuminate the enablers, barriers and sources of support they drew on. Participants spoke about the themes in a comparable manner across gender, career stage, and discipline. We now consider how these themes relate to prior research, interactions between themes, and the role of formal training.

Two of the themes – *establishing expertise* and *pursuing passion* – provide updated evidence which is consistent with previous studies introduced earlier. Thus, cultivating an identity, positioning oneself as an expert, gaining recognition and contributing to the wider community are comparable to Åkerlind (2008b)'s conceptions of '*becoming confident*', '*becoming recognised*' and '*becoming more sophisticated*'. This also fits within Brew (2001)'s '*trading*' and '*journey*' conceptions, and Evans (2011)'s '*behavioural*', '*attitudinal' and 'intellectual'* dimensions. While aspects concerning research values, prioritisation of research activities and motivation correspond with Evan's '*behavioural*' and '*attitudinal*' components, activities such as publishing earlier and independently from one's supervisors/mentors align with Åkerlind's '*becoming confident*' conception. Additionally, increasing research output overlaps with '*becoming more productive*', '*trading' and 'behavioural component'*. Our interviewees' accounts on collaborating with researchers with complementary skills resonate with '*becoming more sophisticated'*. These interviews also substantiate the critical influence of context/circumstance and personal intention on learning and development, as recognised in previous research.

This study foregrounds the importance of *building belonging* in appropriate communities as invaluable interpersonal resources to call on, not only for establishing one's expertise and reputation, but also for *coping with challenge and change* in academic research. We observe elements of Evans's (2011) '*behavioural*' and '*attitudinal*' components associated with these two themes. For instance, interviewees emphasised the importance of understanding and learning how to engage with different research cultures by developing reciprocal and supportive relationships, including mentoring, apprenticeships and non-hierarchical peer collaboration. These types of engagement could bring about changes to the process of doing research (Evans' *processual*), affect personal values and perceptions (*perceptual*) and increase feelings/levels of satisfaction (*motivational*) on research activities undertaken. Consequently, like Evans, our findings indicate the importance of considering all components related to researcher development. Although 'establishing expertise' is integral in developing as a researcher, inclusion of aspects relating to motivation, challenges and support systems provides a more robust understanding of the ways in which researchers develop.

Returning to the workplace and professional learning literature introduced earlier, the main conclusion to be drawn from this study is that when it comes to learning, academic researchers are indeed very much like other professionals. The ways they go about learning are predominantly informal, social, opportunistic, experiential, and deeply integrated with immediate demands of their work (Eraut 2004; Littlejohn, Margaryan, and Milligan 2012). This clearly connects to community of practice theory (Wenger 2000), learning through social engagement (Marsick and Watkins 2001), understanding codified and cultural knowledge of a community (Eraut 2004) and the development of personal agency (van Houten 2023).

In our study, we found peer interactions to be essential in addition to exchanges with experts. We note in *establishing expertise* and *pursuing passion* that observing and engaging with peers and experts within and beyond one's own field, both opportunistically and by design, enlarged perspectives and disciplinary understanding. It is through connecting with and learning from like-minded researchers that their passion was sustained and sharpened through feedback and encouragement, and instrumental in building professional confidence. Furthermore, we observe that personal values, motivations and intentions influence learning and development in *pursuing passion* and connect this with the work of Evans (2024). In *coping with challenge and change*, researchers described personal experiences of coping with difficult workplaces, and grant and paper rejections, whose impacts can be offset by supportive peers and mentors who help rebuild confidence and advise on career choices. This form of 'learning from negative knowledge' through personal and collective experience (Gartmeier et al. 2008) supports the development of research self-efficacy (Niehaus, Garcia, and Jillian 2018), and relates to one's ability in recognising shortcomings and adopting ways to improve (Robbins and LePeau 2018). Clearly connected to this is *building belonging*, whereby a sense of identity and inclusion strengthens and develops personal resilience. Thus, reiterating the positive influence social engagement can have in supporting personal reflectivity (Marsick and Watkins 2001), self-efficacy (Niehaus, Garcia, and Jillian 2018), and agency.

Comparably, an integral component in developing professionally is circumstance and condition of the workplace environment. Eraut (2004) notes the crucial role that a manager's involvement can play in creating a supportive environment that facilitates continual learning and growth. In the academic context, this relates primarily to mentors and academic developers. Holosko and Barner (2014) found that the presence of ongoing comprehensive research mentorship was an integral component in developing research capacity. Moreover, the alignment between personal motivation and aims with organisational goals can support learning by increasing personal agency and sense of autonomy (van Houten 2023). Therefore, recognising the inherent complexity involved in understanding dynamics between researcher, communities and the ways learning occurs is a starting point in developing appropriate scaffolds in supporting the development of a conducive environment for learning.

With regard to the role of formal learning, although most researchers (19 of 24) only spoke about the role of training when specifically prompted during the interview, there was consensus on its benefits in developing foundational skills, and just-in-time learning related to immediate needs (e.g. acquiring technical skills, applying to a specific funding call, leadership, adapting to increased seniority, or changing roles). This, together with our themes, supports calls for a more integrated approach to academic development (Evans 2024), combining both context-sensitive formal training with cultivating social support scaffolds, to better meet researchers' needs.

Limitations

This study is based on the primary qualitative analysis of 24 highly published academic researchers active in two disciplinary fields, spanning three career stages, working at institutions in four continents. However, this is a necessarily limited sample in terms of size, and it is possible that the stratification criteria used to balance the sample may have occluded other important insights. We therefore leave it to readers from other fields to ascertain whether the themes and insights reported in this paper apply beyond this limited context. Subsequent studies could test and extend this analysis with more participants, other disciplines, inclusion of researchers from government and industry, and different interviewee selection criteria.

Conclusions

This paper has explored ways in which accomplished researchers learn to become better researchers. A key contribution of this paper is evidencing, in researchers' own voices, how they have learned,

and how this helped them navigate career challenges. Analysis of the interviews led to the construction of four overarching themes – *establishing expertise, pursuing passion, coping with challenge and change, building belonging* – each summarising several sub-themes, which together offer an illuminating picture. These themes emphasise how this cohort of highly published researchers developed the professional and personal support networks that gave them the capacity to adapt to external constraints and opportunities, sustaining their passion and career. We suggest that these insights may be of interest both to other researchers, prompting them to engage intentionally in practices that advance their professional learning, and to institutions that may draw on this work in shaping researcher development strategies to support researchers' learning needs at both the personal and community levels. Giving voice to researchers' perspectives in this way is important if we are to support research cultures and practices that nurture researcher development by design rather than by chance.

Notes

1. To list Evans before Brew (Evans 2012; Brew et al. 2016).
2. https://www.scopus.com/search/form.uri?display=basic#researcher-discovery
3. https://app.dimensions.ai/discover/publication
4. Interviewees are referenced using the following scheme: Field-Career Stage-Gender-Interviewee Number. Thus: HE-MCR-F1 means Higher Education-Mid Career Researcher-Female-1; LA-SCR-M2 means Learning Analytics-Senior Career Researcher-Male-2.

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ORCID

Yuveena Gopalan http://orcid.org/0000-0003-4626-0775
Simon Buckingham Shum http://orcid.org/0000-0002-6334-7429
David Boud http://orcid.org/0000-0002-6883-2722

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Appendix 1

List of interview questions:

Q1: When I say learning to become a better researcher, what springs to your mind first?
Q2: Can you give me any examples where you took the initiative to develop yourself as a researcher? and why?
Q3: Could you think of any examples or situations where you had to reflect on, or change your career direction? Did you make any changes and why?
Q4: Can you think of anything that made it easier or helped in your progression as a researcher?
Q5: How about things that made your progress difficult, were there any barriers or difficulties that you faced? What did you do when faced with these?
Q6: Looking back now, is there anything that you would have done differently knowing what you know now?
Q7: If I were to ask you to give advice from your own experience on becoming a better researcher to other researchers, what would you say?
Q8: Do you think there is a role for formal training in developing as a researcher? Has that proven useful for you personally?
Q9: What are your thoughts on institutional approaches to researcher development? What works well and doesn't?
Q10. What kinds of indicators do you use to evidence that you're growing as a researcher?