Becoming a PI: Luck, agency and persistence …"Just keep rowing!"
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Abstract
While gaining research independence by becoming a principal investigator (PI) is an aspiration for many postdocs, little is known of the actual journey from PhD graduation to taking up the first PI grant. This study provided insight into this experience by using a qualitative narrative approach to document how 60 PIs from a range of disciplines in one European and two UK universities experienced working towards and taking up this significant achievement. We also asked them to provide advice for others a) starting out on the journey to PI status, and b) for being a PI. Regardless of the length of the journey from PhD graduation to first PI grant, more than four-fifths noted the role that luck played. The influence of luck made it even more important for these individuals to sustain a belief in themselves and be agentive in managing the challenges of the journey. Interestingly, the advice they collectively offered reinforced what we perceived in them: a focus on persistence, resilience and commitment as they navigated difficult odds in order to achieve their goals.

Context
Research into the postdoctoral period is still limited in comparison with doctoral education (Evans, 2011) despite this period being increasingly viewed as normative and of increasing length (Cantwell, 2011). In this role, individuals develop their scholarly profiles and research independence (Laudel & Glaser, 2008), with becoming a principal investigator (PI) and attaining a permanent position key aspirations. This study documents that experience from PhD graduation to taking up the first PI grant.

Conceptual framework
The study is premised on the notion that the workplace offers an environment in which to learn key elements of practice, with individuals choosing the degree to which they participate, modify or refuse to participate in such practices (Billett, 2006). The affordances (e.g., specialized equipment) and constraints (e.g., inadequate equipment) in each workplace create a tacit learning environment as individuals engage in work and learn through observation, experience, trial and error, and interaction with others. They make decisions, in this process, of the degree to which they will participate in, modify and resist such practices.

As regards academic work, a key shift for PhD graduates in universities is the development of a sense of independence as researchers (Laudel & Glaser, 2008). This process can be conceived as the development of an identity-trajectory (McAlpine et al., 2013) in which a key aspect is agency over time: individuals articulating and working towards personally-chosen academic (as well as personal[1]) intentions and goals, and in doing so developing and drawing on the support of extended and local networks to develop a unique intellectual profile. Of particular interest in this study was individuals' response to expected as well as unexpected challenges: their capacity to adapt successfully to, and to bounce back from, adverse circumstances, particularly in the context of the academic rejection culture (Baruch & Hall, 2004).

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1 A key tenet of identity-trajectory is that work is embedded in and strongly influenced by personal relationships and responsibilities. In this study, however, the focus is on work, so individual's personal lives are not explored.

Research questions
1. What was their experience of getting a grant?
2. What collective advice did they offer to a) get a grant, and b) manage it?

Methodology
Recruitment: In three research-intensive universities, two in the UK and one in continental Europe, recruitment varied slightly based on local systems. However, in all cases, participants were individuals who responded to an email invitation to participate in the study if they self-defined as meeting the following criteria:
- In the last 5 years, you have been awarded grant funding in your own right for the first time (not including personal fellowships)
- You are supervising others
- You have overall responsibility for the intellectual leadership and overall management of the research project.

Participants: Sixty individuals, 21 females and 39 males represented a range of disciplines with more in sciences and medicine (36) than in social sciences and humanities (24). Thirty-two were international researchers.

Data collection and analysis: After signing consent forms, individuals created a journey plot representing the emotional highs and lows of the journey from PhD graduation to first PI grant. Journey plots are a visual data collection method suited to capturing experiences and related emotions through time (Miller & Brimicombe, 2003). The journey plot template showed the progress of time on the horizontal axis from left to right and the variation in related emotion from high to low on the vertical axis (top to bottom) – with the mid-point marked. Then, in a semi-structured interview, individuals a) elaborated on the experiences in the journey plot, b) described their experience of being a PI, and c) offered advice to aspiring and new PIs. This last was intended to capture explicitly what they had learned through their experience. Finally, they were asked to provide a CV and complete a biographic questionnaire.

Drawing on a qualitative narrative approach (Reissman, 2008), the first analysis involved theorizing from the case, by first creating individual cameos integrating all data for each individual to preserve each individual's experience (the interview, the journey plot, the biographic information and the CV). This is distinct from thematic analysis as commonly practiced in which analysis proceeds by theme across individuals. This made it possible to understand the individual trajectories before looking across the cases seeking patterns of experience.As well, the CVs were collated using a codebook that captured information in anonymized form. These two different forms of analysis enabled us to answer RQ 1.

As for RQ 2, we did a separate analysis. Using emergent coding, we looked for themes in the solicited advice offered by all individuals. Initially, two of us coded a small number of interviews, discussed the results, made refinements, and developed definitions. This process was used several times as coding proceeded. (This process was facilitated by the use of MaxQDA software.) Since we were looking for collective advice, that is, advice offered by a number of researchers, we report only the advice that was named by at least one-quarter of participants.

Results

We integrate discussion in reporting results.

RQ1: What was their experience of getting a grant?

Learning on the job: Over a third (22) of participants talked explicitly about how they learned through experience: 'In the end, you have to learn it by doing it' (Bertrand). In other words, individuals recognized and articulate the role of learning in and through the workplace. You may recall that an underlying premise of our study was that the workplace provides an environment in which to learn work practices, to participate, modify or reject practices. A number noted that transitions, i.e., between institutions and/or roles, were times of a steep learning curve, a time when you are out of 'your comfort zone:'

> You go into a postdoc usually in a different lab, in a different country often, like in my case, and you're out of your comfort zone, and you have to then re-establish yourself in a completely new environment …You go in with a lot of enthusiasm and it rapidly sort of em…goes downwards, and that's not necessarily a completely negative thing. I think it's just you're faced with the challenges of doing a postdoc somewhere new. (Otto)

Lengthy periods to getting a grant: The analysis demonstrated individuals' commitment to lengthy periods of postdoctoral work to achieve PI status. Strikingly, the time to getting a grant varied from 1-11 years (mean 5.08 years, 53.3%, n=32). In other words, 46.7%, nearly half, obtained a grant only after five years, i.e., beyond the time often defined as 'Early Career Researcher.'

Demonstrating agency – resilience and managing rejection: Clearly, for many, achieving this goal of a grant was fraught with challenges which required resilience and self-belief. Given that motivation to apply may drop once the chance of receiving an award drops below 30% (Bazeley, 2003), individuals' continuing effort to achieve success is quite striking (since their chance of getting a grant was sometimes only one-in-ten). Thus, it is not surprising that about one-third named luck as playing a role in their grant success: 'the randomness factor' (Alphonse). This belief could be a way to deal with being prepared for rejection, which would be realistic since van Arensbergen & van den Besselaar (2012) have demonstrated empirically the role that luck plays at various stages of the review process.

Luck/ lack of luck was also named as playing a role more broadly in their emotionally-laden journeys. About four-fifths noted the role of luck in finding/being found by a great mentor, being offered great opportunities, getting a permanent job. Still, while luck played a role, that was not sufficient – agency was required – as Marianne noted:

> I've been very lucky …in being both offered opportunities and being able to recognise an opportunity, you know, and seize it, which I think is sometimes very difficult to do because big changes are scary [laughing] and you have a lot to weigh up.

Mobility and re-locations: Individuals had often been internationally mobile before graduating. Once graduated, they remained internationally mobile with four-fifths moving internationally at least once. Such moves meant dealing not only with new institutions, but also new cultures and

languages at work, but as well, dealing with important life tasks and responsibilities, e.g., partner co-locating, ensuring stability of families, establishing children in schools, etc. Such moves, while personally demanding, are important in advancing career success. Horta (2009) has shown the positive and significant effects of international postdocs: enhancing access to resources, integration into international scholarly networks and ultimately research publications. International postdocs "have the potential to be, privileged information gatekeepers between the national and international scientific and scholarly communities" (699).

RQ2: What collective advice did they have for a) getting a grant, and b) managing the grant?
We report only the advice that was noted by 25% or more of the participants. There were five forms of advice that met this criterion. The form of advice and definition is provided below.

- *Seek support*: Informal and formal support from a range of sources; range of forms – one-to-one, coaching, mentoring, training; support and guidance related to grants and administration; support for parents (childcare and costs); development opportunities; can help individuals talk through the challenges they faced, understand how they work; can be useful for self-reflection
- *Invest in the right things*: The ability to focus on what matters, e.g. publishing, getting the right paper out, moving department/discipline/country/gaining international experience; awareness to know what is to be avoided, e.g. teaching
- *Drive your own success*: Vision, drive, passion, persistence and resilience (sometimes against all odds); have a clear plan of what you want to do and identify your research goals/pipeline early on; may involve taking one step at a time (start with small grants and build up from success); believe in yourself/ keep rowing/ be persistent/ work hard/ be resilient; passion for research "do something you like"; take risks (calculated?); making a name for yourself via pubs; gaining a good reputation so people want to work with you; managing stress and coping with challenges, choosing your battles; some are traits, some are strategies;
- Understand the system: Understand the system for promotion, tenure-track, promotion and the criteria used governance, national policy, grant funding, all aspects of academic system;
- Know yourself: Be self-aware, self-reliant, and self-critical; know your own limitations/weaknesses; know how to manage stress and cope with challenges; gain skills which will be useful; no mention necessarily of seeking support to do this

In looking at Table 2 below, one sees some differences in advice between 'becoming a PI' and 'being a PI'.

Table 2. Forms of advice offered by participants

Advice	Becoming a PI %	Being a PI %	Difference %
Seek support	*50.0*	*33.3*	*-17*
Invest in the right things	43.1	39.2	-4
Drive your own success	43.1	41.2	-2
Understand the system	34.5	33.3	-1
Know yourself	28.3	*NA*	NA

Seek support was the only advice of the five showing a substantial difference in frequency between becoming a PI and being a PI. Further, 'know yourself' did not emerge as a prominent piece of advice for 'being a PI.'

In looking across the advice for both roles, we were struck by how much the advice made visible the importance of being agentive. For instance, the consistency of advice linked to driving your own success, and investing in the right things demonstrates a sense that individuals needed to and could overcome the challenges – essential for resilience over the long-term and dealing with 'luck.'

Conclusion

"Just keep rowing!" This participant quote typifies the persistence and resilience that emerged from the analysis of these individuals' narratives. Despite their belief that luck played a role, these PIs continued to invest for relatively lengthy periods in seeking a grant. They demonstrated sustained agency in developing their intellectual profile and drew on their extended networks and institutional resources to help them in this regard. We conclude their belief in themselves contributed to their commitment which enabled resistance to future challenges (Day, 2008).

References

Bazeley, P. (2003). Defining 'early career' in research. *Higher Education, 45*(3), 257-279.

Billett, S. (2006). Relational interdependence between social and individual agency in work and working life. *Mind, Culture and Activity, 13*(1), 53-69.

Cantwell, B. (2011). Academic in-sourcing: International postdoctoral employment and new modes of academic production. *Journal of Higher Education Policy and Management, 33*(2), 101-114.

Day, C. (2008). Committed for life? Variation in teachers' work, lives and effectiveness. *Journal of Educational Change*, 9, 243-260.

Evans, L. (2011). The scholarship of researcher development: Mapping the terrain and pushing back boundaries. *International Journal for Researcher Development, 2*(2), 75-98.

Horta, H. (2009). Holding a post-doctoral position before becoming a faculty member: Does it bring benefits for the scholarly enterprise? *Higher Education, 58, 689-721.*

Laudel, G., & Glaser, J. (2008). From apprentice to colleague: The metamorphosis of early career researchers. *Higher Education, 55*, 387-406.

McAlpine, L. (2015). Becoming a PI: Shifting from 'doing' to 'managing' research. *Teaching in Higher Education.* http://dx.doi.org/10.1080/13562517.2015.1110789.

McAlpine, L., Amundsen, C., & Turner, G. (2013). Identity-trajectory: Reframing early career academic experience. *British Educational Research Journal*. doi: 10.1002/berj.3123

Riessman, C. (2008). *Narrative Methods for the Human Sciences*. London, UK: Sage.

van Arensburgen, P., & van den Besselaar, P. (2012). The selection of scientific talent in the allocation of research grants. *Higher Education Policy, 25*, 381-405.