

Supporting the mental health and wellbeing of Postgraduate Research students: A rapid review

Dr Dave Watson Lecturer in Organisational Behaviour, Norwich Business School, University of East Anglia¹

Dr John Turnpenny Associate Dean for Postgraduate Research, and Senior Lecturer in Public Policy, Faculty of Arts and Humanities, University of East Anglia

Executive Summary

Despite increased interest in and concern over student mental health, postgraduate research (PGR) students remain a somewhat overlooked cohort. There is a growing body of work on PGR mental health, key factors influencing this, and initiatives to improve PGR wellbeing. However, little has been done to date to review these studies. The aim of this review was to summarize and synthesize existing research by asking the question:

What is the effectiveness of different interventions, practices and institutional arrangements in supporting PGR mental health?

A rapid systematic review methodology was applied in searching academic databases and key websites for relevant literature, through structured searches using key search terms. After screening the 844 papers initially identified, 16 were judged to be relevant to the review.

These 16 studies together included gathered data from 815 students, 33 staff members (mainly supervisors) and 7 recent PGR graduates. The majority of studies adopted a qualitative or mixed-methods approach. Only 2 took a purely quantitative approach to evaluation. The favouring of qualitative methods is not surprising given the relatively small sample size of studies and practice-focussed nature of the evaluations. Evaluations were typically cross-sectional and often provided subjective accounts of the effectiveness of different mechanisms for supporting PGR wellbeing. It was therefore difficult to generalise from the findings of the review, or appraise whether specific approaches are effective. However, the data captured are rich, and a range of approaches to supporting PGRs and processes influencing their wellbeing were apparent. Four distinct but overlapping types of approach were identified:

1) The structure and quality of the working **relationship between PGR students and their supervisors** was identified as a key causal factor influencing PGR wellbeing. Evaluations of practices aimed at improving this relationship focussed on communication and *relational quality*. These studies identified increased confidence, autonomy as key wellbeing benefits and recognising the need for *emotional support* as part of the supervision process.

2) The independent nature of PGR study can create isolation and presents challenges for self-motivation and self-management, highlighting the need for PGRs to develop *resilience* to thrive and progress. A number of studies evaluated programmes aimed at building these **psychological or emotional resources**. They show that targeted mental health support through counselling and behavioural approaches can reduce anxiety, stress and wellbeing problems, improving course

¹ Corresponding author. email: David.Watson@uea.ac.uk; Tel: 01603 591382

retention. Students also looked to peers, friends and services outside university in building and maintaining psychological resources.

3) Developing a sense of academic identity, career progression and **personal and professional development** are all key parts of successful PGR study and wellbeing. Coaching or mentoring schemes can help students develop *confidence* and *problem solving* skills and provide a more neutral support space than a supervisory relationship. Mentoring schemes can also build a sense of *community* in particular cohorts or across the PGR community more generally facilitating *social and emotional support*. Although peer mentoring can create a burden on some PGRs, *peer support* was a common beneficial aspect of many interventions and practices included in the review.

4) Developing the PGR **community** in institutions is key to enable peer support. This can be achieved through shared working space, social events, group training programs and online platforms. The creation of community establishes mechanisms for sharing tacit knowledge and resources that can be useful in coping and succeeding in the PhD. Strong PGR community enables *problem solving* of issues related to PGR experience, access to *support* and *skill sharing*. Student led approaches can be successful, but they benefit if they have good institutional support. More structured training or skills development programmes can also build community, develop *confidence* and academic voice. These are crucial in establishing *competencies* that allow PGR students to attain key milestones during study.

The diagram below proposes a conceptual model that maps these four types of approach according to key factors in supporting PGR wellbeing:



Many of the approaches are not necessarily explicitly about addressing wellbeing problems, but are actions which are good institutional practice anyway. They are likely to support timelier thesis

submission rates, fewer withdrawals, and better academic outcomes as well as reducing wellbeing problems.

Recommendations

- Universities should facilitate the development of PGR community using a range of methods suited to specific contexts, which may include cohort training programmes and student led initiatives. Even if student led, some institutional support will be required, which again will depend on context. Opportunities for PGR students to meaningfully inform department or university wide initiatives need to be considered. Virtual communities can be complementary and connect PGRs at a broader level.
- Provision of dedicated mental health support services are important, but interventions that facilitate personal development and build resilience are likely to be useful preventative strategies.
- Online support and social media platforms can provide support, but are not comprehensive, and online spaces can potentially be negative for wellbeing. Awareness of online support may be limited and trusted public health services may be preferred. Universities should make efforts to understand what sources of online support PGR students access and use, and what may be most helpful.
- The supervisory relationship is important for PGR wellbeing. Institutions and individual departments should consider how to embed emotional support in supervisor training and the development and use of tools/strategies to manage and improve the supervisory relationship. This may necessitate additional support for supervisors and other staff.
- Peer support and mentoring is an important source of good mental health and professional development, but also demands resources and commitment from individuals and may require specialized knowledge/skills. They can in some cases create a burden on mentors. The impact on all PGRs participating need to be considered. Universities could consider facilitating peer support through professional development and training to encourage buy in from PGRs and others.

Supporting the mental health and wellbeing of Postgraduate Research students: A rapid review

Introduction

This report presents the findings of a rapid review aimed at understanding how successful interventions have been in supporting postgraduate research students' (PGRs) mental health. This work is part of a broader initiative at the University of East Anglia (UEA): The 'Courage' project, aimed at supporting prevention of, early intervention in, and cultural change around mental health and wellbeing problems among PGRs. This project received funding from the Higher Education Funding Council for England (HEFCE²) and is one of 17 initiatives currently underway at UK universities addressing PGR wellbeing supported by the HEFCE Catalyst fund³.

Student mental health is a source of increased interest and concern, within the UK and internationally (Hughes et al, 2018; Carter et al., 2017; Papadatou-Pastou et al., 2017; Brown, 2016). However the focus of this interest has largely remained on undergraduate students and to a lesser extent postgraduate taught students. PGRs have largely been overlooked, although there is now a significant if relatively small body of literature that provides a picture of PGR mental health and key factors influencing this. A recent piece of research commissioned by HEFCE⁴ highlighted factors influencing PGR wellbeing, as have several other recent publications (Barry et al., 2018; Schmidt & Hansson, 2018; Waight & Giordano, 2018; Leveque et al., 2017; Stubbs, Pyhältö, & Lonka, 2011). This is also the focus of a systematic review currently underway as part of another HEFCE Catalyst funded initiative. From this literature, factors affecting PGR mental health include⁵:

- Pressures of doctoral research – normalization of PGR study as a stressful experience and lack of support.
- Supervisory relationship – structure and quality of working relationship with supervisors.
- Financial concerns – scholarship conditions and length and pressures of combining study with paid work.
- Workload and control – PGRs can face multiple, diverse and competing demands not all of which are directly related to the programme of study.
- Harassment – close interpersonal relationships, dependence and cultural differences can create conditions for harassment.
- Professional development and career progression – variable provision and access to facilities and training as well as multiple career trajectories of PGRs can create challenges.
- Research progress – the rate at which students progress and in particular their perception of this process.
- Academic identity – scholarly community, feelings of inadequacy and lack of fit with department, supervisors or academia in general can be problematic.
- Individual factors – personality, family situation and other characteristics or situations specific to the individual play a role, potentially heightening wellbeing risks for some.

² This organisation has now been replaced by *The Office for Students and Research England*.

³ <http://webarchive.nationalarchives.gov.uk/20180405121723/http://www.hefce.ac.uk/funding/catalyst/pgr-wellbeing/>

⁴ <https://re.ukri.org/documents/2018/mental-health-report/>

⁵ These factors are drawn from the relevant research cited in the section above

- Management of self and motivation – independent program of study and working presents challenges for managing time and work and can also increase isolation.

Rather than presenting a picture of PGR mental health, the main aim of this review is to summarize and synthesize *research that has evaluated interventions or institutional changes aimed at enhancing PGR wellbeing*. Literature in this area appears rather lacking, and this report is concerned with the practical question of how universities might better address PGR wellbeing, while acknowledging that this needs to be informed by an understanding of key factors that influence it. The review set out to address the following key question:

What is the effectiveness of different interventions, practices and institutional arrangements in supporting PGR mental health?

Methods

This *rapid review* adopted systematic review methodology that was applied in a short time frame to synthesize relevant material (Grant & Booth, 2009). It was aimed at informing work within the wider ‘Courage’ project at UEA. Systematic review methods call for structured searches using keywords associated with the research question that are then systematically screened to identify relevant publications. Findings from these are then synthesized.

Search terms and strategy

Search terms were used to identify studies by their population or sample and outcomes. These terms were intended to identify a broader range of studies than we would include in the review, with exclusion criteria applied throughout the screening process.

- Population terms:
(PGR OR PHD OR postgraduate_research) AND student*
- Outcome terms:
Mental_health OR mental_illness OR wellbeing OR well-being OR well_being OR depression OR anxiety OR stress* OR psychological_health OR emotion* OR affect* OR mood OR quality_of_life OR self-esteem.

These terms were searched in a range of databases⁶, results were combined and duplicates removed. We also issued a call for evidence, and searched organizations’ websites⁷ that were thought likely to return relevant case studies. However, these methods did not produce any additional material related to our research question than those papers already identified through searches of the academic databases. However, a paper already identified in our searches was highlighted to us, adding validity to our search strategy and terms.

⁶ Databases were: MEDLINE Complete, Web of Science, PsychINFO, Education Resource Information Centre (ERIC) and British Education Index.

⁷ Organizational websites were: Student minds; NUS; Universities UK; HEFCE; Advance HE (formerly Higher Education Academy); Higher Education Policy Institute; UK Council for Graduate Education; Vitae; Times Higher Education

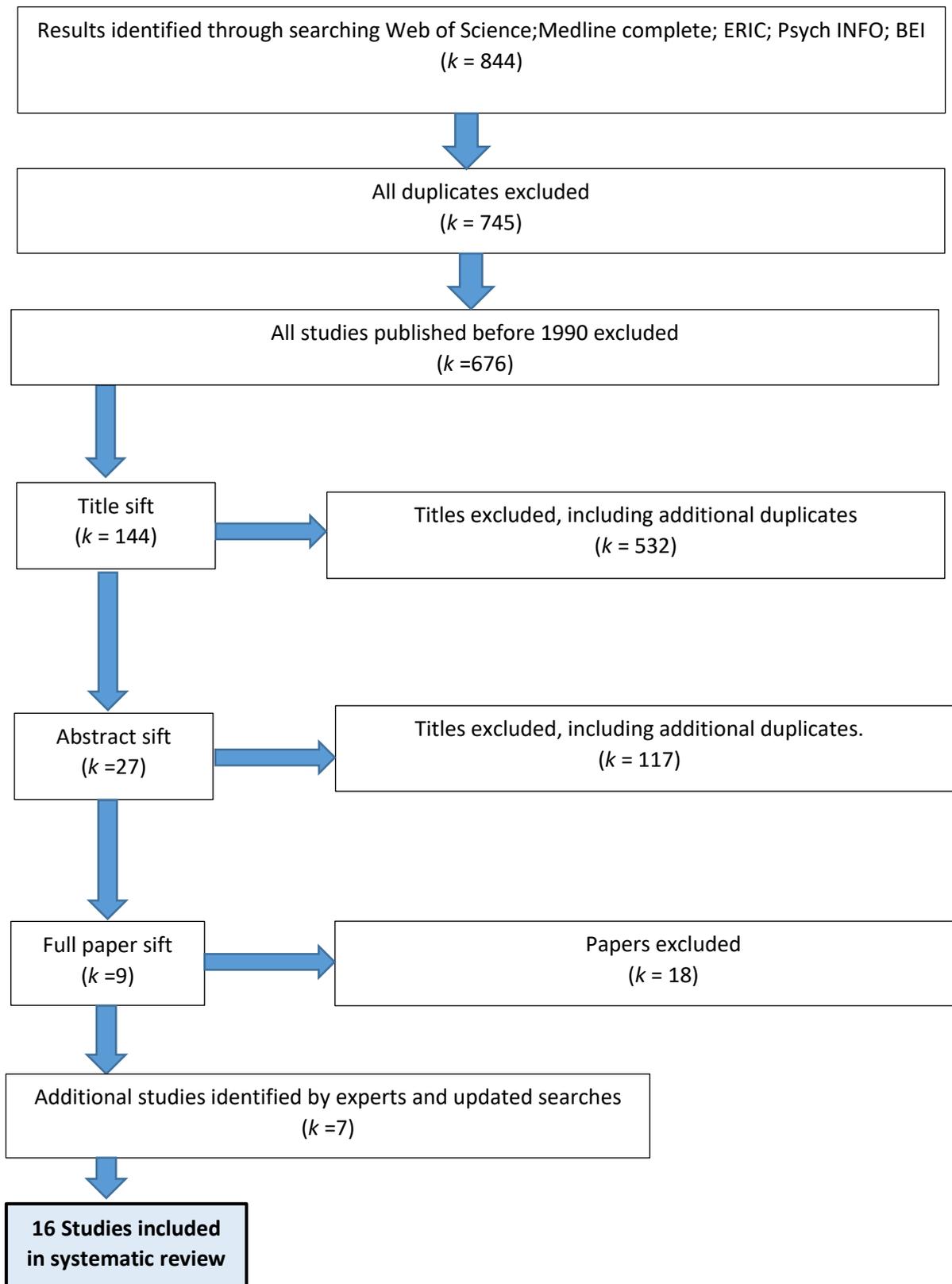
Inclusion/Exclusion criteria

	INCLUDE	EXCLUDE
POPULATION	<ul style="list-style-type: none"> – UK Postgraduate Research Students or similar context e.g. EU, US, Australia – Wider population of students, but reports findings for PGR students as sub-group 	<ul style="list-style-type: none"> – Undergraduate Students – Postgraduate (not research) students – College/FE students – Distinctly different context to UK Higher Education
STUDY DESIGN	<ul style="list-style-type: none"> – Qualitative or quantitative empirical study – Intervention studies – Systematic review or meta-analyses – Evaluates specific intervention or institutional environment in regard to its impact on PGR mental health 	<ul style="list-style-type: none"> – Review, but not systematic in approach – Editorials, commentaries, opinion pieces etc.
OUTCOMES	<ul style="list-style-type: none"> – Mental health and well-being measured quantitatively e.g. WEMWEBS, GAD-7 or qualitatively conceptualized. – Other measures that may be linked to mental health and well-being 	<ul style="list-style-type: none"> – Course satisfaction
DATE	<ul style="list-style-type: none"> – Published within the last 20 years (1998 onwards) 	<ul style="list-style-type: none"> – Published more than 20 years ago (1997 and earlier)
LANGUAGE	<ul style="list-style-type: none"> – Published in English language 	<ul style="list-style-type: none"> – Non-English language publications
PUBLICATION STATUS	<ul style="list-style-type: none"> – Electronically accessible or in hard copy at UEA – Peer-reviewed journal publication/book chapter/report – Publicly accessible reports and briefings that report methodology 	<ul style="list-style-type: none"> – Not immediately accessible – Editorials, commentaries, opinion pieces etc. that do not clearly report empirical findings or methodology – Thesis, dissertation

The search results were screened for relevance by two reviewers, first by title, then abstract according to the criteria detailed above. All articles deemed eligible were downloaded to be screened again as full papers, and any disagreements at the title and abstract stage were discussed and resolved. Any full papers rejected were double checked by the second reviewer and the remaining titles were then retained for the review and relevant data extracted and synthesized. Some additional papers were identified through references and expert advice⁸ as well as updating the search through saved search alerts. This took the total number of studies included in the review to 16.

⁸ Experts were those working on the Courage project who were contacted for potentially relevant sources.

Flowchart of Search Process



The quality appraisal of studies was assessed using a tool developed for reviews where a diversity of methods is included both within and between studies (Pluye et al., 2009). However we do not provide a quality ratings of the findings, given the small number of studies, diversity and limitations of methodological designs. We provide instead a narrative summary and develop a conceptual model.

Findings

In general most of the studies identified evaluated a relatively small population of PGR students and a clearly defined programme or intervention aimed at improving wellbeing in a general sense. Some studies addressed other important outcomes, such as degree progress or professional development. In total the studies included gathered data from 815 students, 33 staff members (mainly supervisors) and 7 recent PGR graduates. However, a large proportion of this number (N=594) came from one large study which surveyed students more widely at a UK university to understand the extent to which they used student services to support mental health (Waight & Giordano, 2018). Across the studies, a range of methods were applied to evaluate mechanisms for supporting PGR wellbeing, but the majority adopted a qualitative approach (10 studies), 4 studies used a mixture of methods and only 2 studies applied a purely quantitative approach to evaluation. The favouring of qualitative methods is not surprising given the relatively small average sample size of studies included (N=17.07 excluding the study with a large survey sample (Waight & Giordano, 2018)).

Many of the qualitative and mixed methods studies included drew on personal experiences using auto-ethnographic methods (Bennett & Folley, 2014; Gurr, 2001; Hobbs, Burroughs, & McGloughlin, 2015; Anson & Laurie, 2004; Lee, 2017, Marchand, 2017). Given that all participants were academic practitioners in some sense, whether students or staff, the use of auto-ethnographic methods is perhaps expected. Those studies using qualitative and mixed methods employed interviews, focus groups, drew on field notes and some documentary evidence. The mixed methods studies all used cross-sectional surveys that included free text responses (Kearns, Gardiner & Marshall, 2008) or incorporated other qualitative methods (Hobbs, Burroughs & McGloughlin, 2015; Lane & Dewilde, 2018; Waight & Giordano, 2018). The two studies using just quantitative methods both used pre-post designs to examine the longitudinal impact of a positive psychology intervention (Marais, Shankland, Haag, Fialt, & Juniper, 2018) and a counselling service (Wright, 2006), although the latter did not compare the intervention group with a control like the former. Only one other qualitative study took a longitudinal approach, interviewing participants of a coaching programme for underrepresented minorities in 3 consecutive years (Williams, Thakore, & McGee, 2017).

All of the included studies sampled PGR students and some included staff perspectives (Green & Bowden, 2012; Howells, Stafford, Guijt & Breadmore, 2017) and one also sampled views of recent graduates in addition to staff and current PGR students (Hobbs et al., 2015). Not all studies took place in the UK higher education sector, although several did. Seven of the studies were undertaken at institutions in the UK and Ireland, five from Australia, two from New Zealand, one study from the United States and one study undertaken at a French university. Within the 16 studies included in the review some focussed exclusively on the experiences of international students (Chatterjee-Padmanabhan, & Nielsen, 2018; Lee, 2017; Mason & Hickman, 2017) or minority groups (Williams et al., 2017).

In general the different approaches evaluated were diverse, with a wide range of methods applied and small average sample sizes. Moreover the evaluations were typically cross-sectional and often provided subjective accounts of the effectiveness of different mechanisms for supporting PGR

wellbeing. These characteristics meant it was difficult to generalise from the findings of the review, or appraise whether specific approaches are particularly effective. However, the data captured in the review is still rich, and will usefully inform future approaches to supporting PGRs. In the next two sections these data are discussed in more depth in terms of the different *approaches* taken and the *outcomes* for PGR wellbeing.

Approaches to supporting PGR wellbeing

Studies included in the review were quite diverse in terms of what they evaluated as interventions, practices or institutional supports for PGR wellbeing. We have drawn out four distinct, but overlapping areas where different types of approach to supporting PGRs and processes influencing their wellbeing can be identified:

1) The structure and quality of the working **relationship between PGR students and their supervisors** was identified as a key causal factor influencing PGR wellbeing. Several studies in the review evaluated different practices in respect of this. Three studies directly addressed the relationship between PGR students and their supervisors and evaluated: 1) a supervisory model that aimed to align expectations of students and supervisors (Gurr, 2001); 2) the introduction of gratitude practices between students and supervisors (Howells et al., 2017) and; 3) the development of ‘completion mindsets’ by recognising the emotional dimension to supervisory support and incorporating mindfulness (Green & Bowden, 2012). These approaches sought to improve mental health and wellbeing by improving communication and the *relational quality* between supervisors and students. Improving the relationship between students and their key academic mentors is likely to be beneficial in a number of ways for PGR wellbeing. Increased confidence was expressed by students participating in the gratitude practices intervention (Howells et al., 2017) and those adopting the toolkit to align supervisory style (Gurr, 2001). Aligning supervisory style by using a graphical aid to express and negotiate student and supervisor expectations enabled the students to be more confident in developing autonomy or access more support if needed (Gurr, 2001). The need for *emotional support* was a key finding from the study aiming to develop a ‘completion mindset’ supervisory model (Green & Bowden, 2012). The study explicitly recognises the emotional dimension of PhD supervision and argues these needs to be planned as part of the supervision process, supervisors and students both acknowledging the multiple roles supervisors play.

2) The independent nature of PGR study can create isolation and presents challenges for self-motivation and self-management, highlighting the need for PGRs to develop *resilience* to thrive and progress. A number of studies evaluated programmes aimed at building these **psychological or emotional resources**. The large scale study by Waight & Giordano (2018) sought to comprehensively evaluate the extent to which students were aware of and accessing student services to support these psychological resources. The study underlined that although students were looking for support through the university and using those services, it was more common for students to use other health services. The study also showed the importance of family, friends and peers in providing support, and that embarrassment and uncertainty could act as barriers to seeking mental health support. This led the authors to recommend the development of better self-help and preventative services. Study participants identified the focus groups used by the study authors to evaluate use of services as useful forums in themselves for sharing experiences and building resilience. Other studies more directly evaluated programmes that aimed to build resources through a cognitive behavioural approach (Kearns et al., 2008), a positive psychology intervention (Marais et al., 2018) and a counselling intervention (Wright, 2006). These studies showed reduced anxiety (Marais et al., 2018), reduced

stress (Kearns et al., 2008), fewer wellbeing problems and better course retention (Wright 2006). The cognitive behavioural coaching intervention aimed to combine cognitive skills for managing emotionally destructive behaviour with practical time and work management skills. The study argued that the psychological or emotional dimension needs to be embedded in PGR training (Kearns et al., 2008).

3) Developing a sense of academic identity, career progression and **personal and professional development** are all key parts of successful PGR study and wellbeing. Several studies evaluated *coaching or mentoring schemes* for PGR students. Lane & DeWilde (2018) looked at the challenges and issues for PGR students and the impact of a coaching programme that students could self-refer to. Coaching sessions can offer a neutral space to help resolve issues in the relationship between PhD supervisors and their students. Participating students reported increased confidence and ability to manage their relationship with supervisors as well as other skills associated with PhD study, such as time management. A perceived lack of community was identified as a key challenge also. Another mentoring intervention paired current PhD students with new students and facilitated social events to integrate new students and build community (Mason et al., 2017). In taking a peer led approach to mentoring, this intervention built community much more directly within the PGR cohort and also provided a development opportunity to the students doing the mentoring. However the investment of time and effort raised questions about how this effort should be recognized via accreditation or some sort of payment. The third study evaluating a coaching scheme also included some peer interaction, but was centred on experienced academics who came from underrepresented minority (URM) mentoring PGR students with similar backgrounds (Williams et al., 2017). Repeated qualitative interviews with participants identified the multiple roles coaches played in providing informational and emotional support, as well as support in appraising student progress where they could offer a second opinion outside of the formal supervisory relationship. The coaching programme created a peer group of students with similar characteristics that facilitated social support and comparison of similar issues and ways of addressing them. Two other studies looked more specifically at training or skills development programmes for PGRs. One evaluation focussed on a thesis writing group specifically aimed at international students to support them at a key stage in the doctoral journey – the presentation of a detailed research proposal (Chatterjee-Padmanabhan, & Nielsen, 2018). The uncertainty and lack of confidence in academic voice and identity surface as key issues that the writing group begins to address enabling practices of reflection and critical expression as scholars who are part of a research community. This intervention was short – only six sessions over two weeks – and targeted at a particular milestone. In contrast, Hobbs et al. (2015) evaluated the formalisation of PhD training at an Irish University's Geography department. The much more extensive compulsory training programme did produce a greater sense of community within the department, reducing isolation. However, the study also raised some potential issues including the pressure of completing modules in addition to the PhD and a lack of sensitivity to individual training requirements.

4) Developing the PGR **community** in institutions is key to enable peer support. This can be achieved through shared working space, social events, group training programs and online platforms. One study charted the evolution of a community of practice amongst a PGR cohort at New Zealand University (Janson & Howard, 2004). The community was led by students, but supported and encouraged by faculty staff. It put on a number of seminars, summer schools and created online resources and information. The creation of the community established mechanisms for sharing tacit knowledge and a repository of resources that could be useful in coping and succeeding in the PhD. Emotional support

as well as practical problem solving of issues related to PGR experience were key outcomes. Regular events addressed isolation. These outcomes were also evident in the narrative accounts of doctoral students who described the use of social media as a practice that provides access to a community of support (Bennett & Folley, 2014). Social media is a useful resource for receiving advice connecting PGRs to a virtual community of practice that can assist in the development of skills and identity. However, social media platforms can expose PGRs to risk and critique that can be demoralising and it can act as a distraction that inhibits face to face contact (Bennett & Folley, 2014). Another study which provides a narrative account of peer support is the description of how an individual postgraduate representative can provide important support (Lee, 2017). The individual account comes from an international student who argues that fellow international students can benefit in particular from peer support because they might have limited social networks at the host institution and cultural challenges (see also Mason & Hickman, 2017) in managing their relationships with supervisors. The studies evaluating mechanisms for peer support and advice highlight their role in supporting mental health through emotional support, but they also facilitated sharing of skills and strategies for success in PGR study assisting professional and personal development. Likewise programmes or interventions aimed at enhancing professional development can be effective in building PGR community, as noted above.

Mapping wellbeing outcomes for PGRs

It is difficult to separate out the different approaches included in the review since there are many overlapping elements – for example, the outcomes that follow from a coaching programme are not necessarily different to those arising from a student led community of practice. Both can facilitate the sharing of knowledge and experiences that provides emotional support and resources to face issues arising in PGR study. The qualitative nature of much of the data also makes it difficult to identify explicit outcomes that are distinguishable from one another since many of the studies talked broadly about wellbeing, incorporating aspects like confidence and support. It is also clear that many of the approaches are not necessarily explicitly about addressing wellbeing problems, but are actions which are good institutional practice anyway. They are likely to support timelier thesis submission rates, fewer withdrawals, and better academic outcomes as well as reducing wellbeing problems.

With these in mind, the diagram below proposes a conceptual model that maps these four types of approach according to key factors in supporting PGR wellbeing:

PGR wellbeing dimensions highlighted in the review



Recommendations for supporting PGR wellbeing through the Courage project at UEA

To apply the insights in this review to supporting PGR wellbeing in the Courage project at UEA, we here map the key findings against the different strands of the Courage project:

Strand of Courage project	Recommendations
<p>Strand A: Developing a research community culture strategy in each of UEA’s four Faculties, Norwich Bioscience Institutes and University of Suffolk, identifying initiatives to grow self-sustaining supportive communities of PGRs in all areas.</p>	<p>PGR community can be developed and supported through cohort training programs and student led initiatives. Even if student led, institutional support will be required. Opportunities for PGR students to meaningfully inform department or university wide initiatives need to be considered. Virtual communities can be complementary and connect to PGR community at wider level.</p>
<p>Strand B: Creating and assessing a peer-delivered resilience training and personal development planning initiative.</p>	<p>Interventions that facilitate personal development and build resilience are likely to be beneficial for well-being. However, this may require specialized knowledge and skill. Peer mentoring might be effective but can create a burden on mentors – benefits for all PGRs participating need to be considered.</p>

<p>Strand C: Creating and delivering a programme of “low commitment” sports and fitness activity, enabling PGRs to access social and physical activity to suit them to support health and community-building among PGRs, academic staff and administrators.</p>	<p>Review did not identify any evaluations of sports and fitness based activities.</p>
<p>Strand D: Evaluating impact of current online support programmes for both PGRs and staff,</p>	<p>Some evidence of online support through social media, but not comprehensive and could potentially be negative for wellbeing. Awareness of online support may be limited and trusted public health services may be preferred.</p>
<p>Strand E: developing and running pilot MA Higher Education Practice (HEP) module on PGR Supervision, and online training for all PGR supervisors. Both will include recognition and appropriate early action on mental health issues.</p>	<p>Evidence that embedding emotional support role of supervisor in training is beneficial, and that tools to manage and improve the relationship between PGR students and supervisors can be helpful.</p>
<p>Strand F: Creating an Associate Tutor (AT) support network, enabling PGRs to exchange good practice with and access support from other ATs (including non-PGRs) and to improve support from other University services.</p>	<p>Peer support is an important source of good mental health and professional development. Linking support network explicitly to professional development through MA HEP or similar might encourage buy in from PGRs and others. Peer support is beneficial, but also demands resources and commitment from individuals.</p>

Recommendations for wider practice

- Universities should facilitate the development of PGR community using a range of methods suited to specific contexts, which may include cohort training programmes and student led initiatives. Even if student-led, some institutional support will be required, which again will depend on context. Opportunities for PGR students to meaningfully inform department or university wide initiatives need to be considered. Virtual communities can be complementary and connect PGRs at a broader level.
- Provision of dedicated mental health support services are important, but interventions that facilitate personal development and build resilience are likely to be useful preventative strategies.
- Online support and social media platforms can provide support, but are not comprehensive, and online spaces can potentially be negative for wellbeing. Awareness of online support may be limited and trusted public health services may be preferred. Universities should make efforts to understand what sources of online support PGR students access and use, and what may be most helpful.
- The supervisory relationship is important for PGR wellbeing. Institutions and individual departments should consider how to embed emotional support in supervisor training and the development and use of tools/strategies to manage and improve the supervisory relationship. This may necessitate additional support for supervisors and other staff.

- Peer support and mentoring is an important source of good mental health and professional development, but also demands resources and commitment from individuals and may require specialized knowledge/skills. They can in some cases create a burden on mentors. The impact on all PGRs participating need to be considered. Universities could consider facilitating peer support through professional development and training to encourage buy in from PGRs and others.

Future research

The evidence base on practices, institutional support and interventions for supporting PGR wellbeing is still thin, although the amount of recent evidence suggests this is growing. The rapid nature of this review and methodology applied is unlikely to have captured all relevant information available. Universities themselves are likely to hold valuable information evaluating practices that is not available as published research either as grey literature or in academic outlets. Sharing this through dedicated platforms⁹ will be vital to further improving PGR wellbeing nationally and internationally. The PGR cohort, which is typically quite small and varied in each institution presents challenges to more extensive quantitative research to understand the effects of particular practices and interventions. Researchers and practitioners will need to select appropriate techniques and combine methods where necessary. Although the review did identify quantitative studies, and one large survey in particular, there are limitations to what these kind of approaches can tell us about practices at a more micro level. However, if PGR numbers continue to grow then quantitative methods may become more applicable, although qualitative studies remain valuable for capturing rich data of subjective experiences particularly those of students themselves.

⁹ See for example, <https://whatworkswellbeing.org/higher-education/>

References (those marked with an asterisk are studies included in the review)

- *Bennett, E., & Folley, S. (2014). A tale of two doctoral students: social media tools and hybridised identities. *Research in Learning Technology*, 22, 23791.
- *Barry, K. M., Woods, M., Warnecke, E., Stirling, C., & Martin, A. (2018). Psychological health of doctoral candidates, study-related challenges and perceived performance. *Higher Education Research & Development*, 37(3), 468-483.
- Brown, P. (2016). *The Invisible Problem?: Improving Students' Mental Health*. Higher Education Policy Institute.
- Carter, M. A., Pagliano, P., Francis, A., & Thorne, M. (2017). Australian university students and mental health: viewpoints from the literature. *International Journal of Innovation, Creativity and Change*, 3, 1-25.
- *Chatterjee-Padmanabhan, M., & Nielsen, W. (2018). Preparing to cross the research proposal threshold: A case study of two international doctoral students. *Innovations in Education and Teaching International*, 55(4), 417-424.
- Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*, 26(2), 91-108.
- *Green, P., & Bowden, J. (2012). Completion mindsets and contexts in doctoral supervision. *Quality Assurance in Education*, 20(1), 66-80.
- *Gurr, G. M. (2001). Negotiating the "Rackety Bridge"—a dynamic model for aligning supervisory style with research student development. *Higher Education Research & Development*, 20(1), 81-92.
- *Hobbs, Burroughs & McGloughlin, (2015). Improving formal research training: developments at NUIMaynooth, Ireland
- *Howells, Stafford, Guijt, & Breadmore, (2017). The role of gratitude in enhancing the relationship between doctoral research students and their supervisors
- Hughes, G., Panjwani, M., Tulcidas, P. and Byrom, N. (2018). "Student Mental Health: The Role and Experiences of Academics." *University of Derby, King's College, London, Student Minds*. Available online at <http://www.studentminds.org.uk/theroleofanacademic.html>
- *Janson, A., & Howard, L. (2004). The odyssey of Ph. D. students becoming a community of practice. *Business Communication Quarterly*, 67(2), 168-181.
- *Kearns, H., Gardiner, M., & Marshall, K. (2008). Innovation in PhD completion: The hardy shall succeed (and be happy!). *Higher Education Research & Development*, 27(1), 77-89.
- *Lane, L. G., & De Wilde, J. (2018). The impact of coaching doctoral students at a university in London. *International Journal of Evidence Based Coaching and Mentoring*, 16(2), 55.
- Levecque, K., Anseel, F., De Beuckelaer, A., Van der Heyden, J., & Gisle, L. (2017). Work organization and mental health problems in PhD students. *Research Policy*, 46(4), 868-879.
- *Lee, S. (2017). Peer Support for International Doctoral Students in Managing Supervision Relationships. *Journal of International Students*, 7(4), 1096-1103.

*Marais, G. A., Shankland, R., Haag, P., Fiault, R., & Juniper, B. (2018). A SURVEY AND A POSITIVE PSYCHOLOGY INTERVENTION ON FRENCH PHD STUDENT WELL-BEING. *International Journal of Doctoral Studies*, 13.

*Marchand, T. (2017). Action learning in postgraduate research training. *Action Learning: Research and Practice*, 14(1), 83-95.

Papadatou-Pastou, M., Goozee, R., Payne, E., Barrable, A., & Tzotzoli, P. (2017). A review of web-based support systems for students in higher education. *International journal of mental health systems*, 11(1), 59. Schmidt, M., & Hansson, E. (2018). Doctoral students' well-being: a literature review. *International journal of qualitative studies on health and well-being*, 13(1), 1508171.

Pluye, P., Gagnon, M. P., Griffiths, F., & Johnson-Lafleur, J. (2009). A scoring system for appraising mixed methods research, and concomitantly appraising qualitative, quantitative and mixed methods primary studies in Mixed Studies Reviews. *International journal of nursing studies*, 46(4), 529-546.

*Mason, A., & Hickman, J. (2017). Students supporting students on the PhD journey: An evaluation of a mentoring scheme for international doctoral students. *Innovations in Education and Teaching International*, 1-11.

*Stubb, J., Pyhältö, K. & Lonka, K (2011). Balancing between inspiration and exhaustion: PhD students' experienced socio-psychological well-being. *Studies in Continuing Education*, 33(1), 33-50.

*Waight, E., & Giordano, A. (2018). Doctoral students' access to non-academic support for mental health. *Journal of Higher Education Policy and Management*, 1-23.

*Williams, S. N., Thakore, B. K., & McGee, R. (2017). Providing social support for underrepresented racial and ethnic minority PhD students in the biomedical sciences: A career coaching model. *CBE—Life Sciences Education*, 16(4).

*Wright, T. (2006). Issues in brief counselling with postgraduate research students. *Counselling Psychology Quarterly*, 19(4), 357-372.

Appendix

Summary table for included studies

Paper details	What is evaluated	Study design	Data/ Population/ Context	Key Findings
Bennett & Folley, (2014). A tale of two doctoral students: social media tools and hybridised identities.	Use of social media to support well-being during doctoral programme – auto ethnographic account of two students.	<u>Qual</u> –Auto ethnographic methods.	N=2. Doctoral students also employed professionally at the university where they study. UK university	Social media can connect to a community of practice assisting in the learning of skills and other resources (including psychological) to support PhD students. Social media can expose people to criticism though and the nature of exchange is quite different to face to face interaction. Can become a distraction and facilitate negative demoralising experiences also, somewhat of a double edged sword
Chatterjee-Padmanabhan, Nielsen, (2018). Preparing to cross the research proposal threshold: A case study of two international doctoral students	Thesis writing group for international students. Qualitative interviews and other material, small sample.	<u>Qual</u> - interviews with 2 participants of writing group, supplemented with field notes and other docs.	N=2. International students at end of year 1 of doctoral study or P/T equivalent. Australian university in department of education.	Peer feedback in the writing group gives students a sense of empowerment and confidence in their ability to contribute as scholars and part of a research community. Participation helped students to develop their identity and voice as independent researchers and overcome challenges particular to foreign language students, who have less familiarity with the discourse and confidence in writing.
Green & Bowden, (2012). Completion Mindsets and Contexts in Doctoral Supervision	Development of a completion mindset through doctoral supervision, aiming to take account of emotional aspect of this. Good quality qualitative study.	<u>Qual</u> - semi-structured interviews with PhD students and supervisors.	N=25. Recently completed/ close to completion PhD students, mixture of discipline, gender, PT/FT & N=25 supervisors with a range of experience in supervision. Australian university.	Argues that emotional space and support is needed in addition to relational, intellectual, physical spaces of support in PhD supervision. Candidates and supervisors acknowledge the need for emotional support. Acknowledges the current context where timeliness and quality remain key concerns influencing completion. Also highlights how mindfulness can be helpful in enabling students to cope and make the most of opportunities in different moments of the PhD.
Gurr, (2001). Negotiating the "Rackety Bridge"--A Dynamic Model for Aligning Supervisory Style with Research Student Development	Model for aligning supervisory style with PGR need and creates space to discuss and agree parameters of relationship. Relies on small sample of own students, but interesting model.	<u>Qual</u> - participant observation/ auto-ethnographic	N=4. Doctoral students under supervision of the author. University of Sydney, Australia.	Students found the toolkit that developed from the model useful in reviewing and improving supervisory relationships. For some it was a way of communicating and recognizing need for greater support, for others it gave them confidence in their greater autonomy. Discussion with other students suggested that those struggling with supervisor relationship may have benefitted from such a facilitative tool.
Hobbs, Burroughs & McGloughlin, (2015). Improving formal research training:	Evaluates the formalisation of training for PhD students through required modules and	<u>Mixed</u> : focus group, questionnaire,	N=30. Staff and PGR students at Irish university Geography dept (one of largest in country). Focus	Participation in formal training/taught modules helped students to start writing earlier and facilitated discussion and exchange also created a sense of PhD community reducing isolation. Question over whether standardized training can lead to a general approach in PhD where more specialized individual support may

developments at NUIMaynooth, Ireland	credits, this includes looking at formation of community and isolation as well as downsides. Mixed methods, relatively large sample.	auto-ethnographic.	group N=10 PGR students; questionnaire N=6 staff; 7 graduated PGR; 7 current PGRs	be better. Pressure of completing modules in addition to PhD; and inequality in required attendance amongst PhD cohort also an issue. Co-production of module design might be helpful. Suggests mix of formal and informal training, not all need be accredited – value of accreditation in addition to PhD questionable.
Howells, Stafford, Guijt, & Breadmore, (2017). The role of gratitude in enhancing the relationship between doctoral research students and their supervisors	Intervention to enhance gratitude practices in supervisors and PGRs. Small scale, but good qualitative study.	<u>Qual</u> - semi-structured interviews where weekly journals used as a prompt (not part of data).	N=19. Pharmacy and Chemistry PGR students and supervisors at an Australian university. N=17 students N=2 supervisors	Participants reflected on the concept of gratitude and used it to analyse/cope with negative thoughts/emotions/ experiences. Reflection prompted awareness of one's own behaviour and recognition of others. Gratitude practices helped students feel calmer, happier, resilient and more confident. Supervisors also reported improved relational quality and therefore better working experience and seemed to improve student feedback. Much more communication and trust built up between supervisors and students.
Janson & Howard, (2004). The Odyssey of Ph.D. Students Becoming a Community of Practice	Evaluates the process and impact of the creation of a community of practice (CoP) amongst PhD students, self-initiated by PGRs. Qualitative, auto ethnographic small sample but rich data.	<u>Quali</u> - data from open ended responses. Responses ranged from 15 lines to 3 pages of text.	N=8. PGR students who participated in Community of Practice. New Zealand university.	CoP enabled students to meet regularly and thereby combat isolation. Share emotional problems and collectively address them as well as other more technical/theoretical PhD issues. Created a repository of and mechanism for sharing tacit knowledge useful and important for coping with and succeeding in PhD. Acted as a forum for problem solving and sharing and combatting negative emotions and isolation. Encouraged PGRs to connect over common experiences that create MH challenges.
Kearns, Gardiner, & Marshall, (2008). Innovation in PhD completion: the hardy shall succeed (and be happy!)	Cognitive, behavioural coaching intervention targeted at PhDs. Good quality, using mixed methods.	<u>Mixed</u> : Questionnaire with fixed response categories and open text responses. Cross-sectional.	N=26. 34 participants invited to respond. Australian university.	Time management skills; specific, regular times spent on the PhDs; specific plan for writing; realism in expectations of self were all correlated with reduced stress and ability to complete. No significant changes in relationship with supervisor and productivity or quality of relationship. Reduced stress and enhanced ability to complete. Argue findings show that specifically targeting emotional factors and destructive thought processes through not only teaching skills to manage time and work but reviewing problems with implementing them was why program is distinctive and successful. Notes that many general PhD training programs lack cognitive and emotional elements
Lane & DeWilde (2018). The impact of coaching doctoral students at a university in London	Looks at confidence, effectiveness and well-being impacts of a coaching program for PGRs, small sample (5), but potentially effective programme	<u>Mixed</u> - Semi-structured interviews and questionnaires distributed at the end of	N=5. Alumni of the coaching program, all 8 invited to respond. UK university in London.	In the area of professional skills students report how the coaching helped them to address common issues in time management and procrastination. The theme of relationship problems with supervisors is where most data is presented and the coaching program seems to provide a safe and neutral space for participants to discuss issues. Female participants seem to be most at risk of relational problems. The data suggests that coaching may help students to develop skills and confidence to be more proactive and assertive in managing their relationships with a supervisor

		the coaching programme.		and others. A lack of community and social isolation is also highlighted as an issue. Some of the participants observed how coaching had enabled them to see life beyond the university and address mental health issues like anxiety and hope/optimism.
Lee, (2017). Peer Support for International Doctoral Students in Managing Supervision Relationships	Auto-ethnographic account of author's own experiences as student advocate and how peer support can help international students, goes beyond supervisory relationship to highlight other areas of support.	<u>Quali</u> - Auto-ethnographic.	N=1. International student from Singapore at a university in New Zealand.	Supervisory relationship is private and meetings take place behind closed doors. Limited social networks of international students might make it difficult for them to access the right guidance/ support. Therefore international students benefit from peer learning/experiences, particularly in relation to communication where cultural differences may be an issue. Peer support and advocates can also help students with stressful issues relating to conditions of their scholarship or visa.
Marais, Shankland, Haag, Fiault & Juniper, (2018). A survey and a positive psychology intervention on French PhD student well-being	Positive psychology intervention shown to improve anxiety in PGRs, however not all measures showed significant change and relatively small effect size. Good quality study though.	<u>Quant</u> - Pre/post quantitative questionnaire . Baseline data 2-3 weeks before the intervention, follow up 0-4 weeks later.	N=23. French Biology students from the university of Lyon. IG=10 and CG=13.	All MH markers and indicators showed improvement in the IG, but only anxiety was significantly different – decrease in anxiety score of 66% (p<0.01).
Marchand, (2017). Action learning in postgraduate research training	Action learning for a small group of anthropology students, auto-ethnographic, but rich data and evidence of impact although some challenges to implementing and wellbeing.	<u>Qualitative</u> – open ended question on impact of participation and understanding of action learning.	N=6. Social anthropology PhD students at various stages of their PhD, none with experience of action learning. UK university.	Participants considered the Action Learning sets a 'valued space' that provided support, reduced isolation and helped in problem solving. Provides space to share and explore issues in quite a deep and personal way that is not always possible elsewhere. Increased awareness of other problems put individuals own in perspective and sharing helped them to take action. Although participants did find the level of sharing and presenting personal issues challenging and emotionally draining to some extent.
Mason & Hickman, (2017). Students supporting students on the PhD journey: An evaluation of a mentoring scheme for international doctoral students	Shows positive effects of mentoring approach for international students for both mentors and mentees, but sample is small (12) and data not that rich. Qualitative	<u>Qual</u> - 2 focus groups, one for mentors & one for mentees. One interview also conducted	N=12. 23 students participated in the mentorship program, but only 5 of 9 mentors and 7 of 14 mentees took part in focus groups. UK university.	Benefits for both mentees and mentors: (i) Academic, practical, social, emotional (mentees) (ii) Professional development, confidence, social (mentors) (iii) Rewards for mentors (iv) Social events Keys to success: (i) Importance of shared room

				<p>(ii) Positive relationships</p> <p>(iii) Pairing of participants (language, gender, culture). One issue was the clarity in expectations of mentors and boundaries as to the support they provided. Similarity between mentor and mentee may be beneficial, but may also limit integration. Demands of mentorship role raises question of whether mentors should be acknowledged through accreditation or financial reward for role.</p>
Waight & Giordano (2018). Doctoral students' access to non-academic support for mental health	Explores doctoral student access to non-academic support (within and outside the university) in order to develop recommendations for improving institutional (university) services with an emphasis on mental health support. Good quality study, but relevant data limited to small qualitative sample.	<u>Mixed</u> methods: Survey combined with focus groups and unstructured interviews with staff. Survey administered over 6 months during which time 6 focus groups were held)	N=35 for focus groups (of 50 invited) male and non UK students under-represented. N=559 for survey around 23% of doctoral population. University of Southampton.	Family and friends source of support both within university and outside, but cliques could isolate new comers and not all students have access to same social support resources. NHS website and other online resources more commonly turned to for advice than student services. Likewise the doctor/gp and private counselling services were commonly used by those seeking help as well as student services. Students not understanding their own mental health need and problem and embarrassment or social discomfort acted as barriers to taking up support. Lack of awareness of support services available and whether it was free. Students reported that preventative sessions that offer training in resilience might help and that focus groups themselves were beneficial in sharing issues and realising they were not alone.
Williams, Thakore, & McGee, (2017). Providing Social Support for Underrepresented Racial and Ethnic Minority PhD Students in the Biomedical Sciences: A Career Coaching Model	Evaluates a cross university coaching program for under-represented minority (URM) students. Good quality qualitative study also some evidence that program was not always needed and didn't always provide the support students wanted/needed, but mainly positive.	<u>Qualitative:</u> Longitudinal, 3 interviews completed in consecutive summer of 3 years of the PhD, but data relating to social support across waves was pooled. Interviews carried out by phone and lasted 45-80 mins	N= 33, All recruited at the beginning of their PhD program. US residents all enrolled in Biomedical PhD and self-identify as URM. Gender balanced sample including Black, Hispanic and Native American ethnicities.	Analysis highlights 3 different forms of support that come from both coaches and peers: emotional support; informational support and; appraisal support. Emotional support with achievements and issues that may contribute to drop out, but also informational support from coaches who've been there and others going through similar issues able to share knowledge and strategies. In appraisal coaches could provide support not forthcoming from research supervisors and a second opinion. Appraisal support from peers validated concerns and helped put individual problems into perspective. Academy enabled social comparison so that URM students did not feel isolated or singled out in treatment/ problems. Some felt that they didn't need the support offered by the academy and others did not get that much support – this was mainly due to lack of time/commitment from peers or student and a view expressed by few.

<p>Wright, (2006). Issues in brief counselling with postgraduate research students</p>	<p>Reduction of depressive symptoms following a counselling intervention for PGRs. Detailed qualitative data and quantitative measures also, good quality mixed methods, but also small sample.</p>	<p><u>Quantitative:</u> pre-post design. Clinical Outcomes Taken at three points: pre-counselling, fourth session and post final session.</p>	<p>N=15 PGR students, mainly white British, but a quarter international. Only 12 students completed all 3 questionnaires and attended 8 or more sessions.</p>	<p>Statistically significant improvements in all dimensions of measures except risk: Wellbeing, problems, functioning, academic impairment, retention. 10 of 12 participants reduced below the clinical cut off point by end of study. Group counselling element of intervention difficult to implement, most requested individual counselling.</p>
--	---	---	---	---