Short title: *The tension-balance model of doctoral researcher mental health*

Title: Hanging in the balance: Conceptualising doctoral researcher mental health as a dynamic balance across key tensions characterising the PhD experience

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doctoral; postgraduate; higher education; qualitative; mental health; wellbeing; risk; vulnerability; protective; occupational; supervisory relationship; supervision

Data availability statement:

The data are not publicly available due to privacy or ethical restrictions. We shall make data available to the scientific community with as few restrictions as feasible, while retaining exclusive use until the publication of major outputs. All data requests should be submitted to

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Highlights

- Conceptual model of doctoral researcher (DR) mental health and wellbeing
- Data derived from focus groups with DRs across academic disciplines
- Individual historical and current factors influence mental health problems
- Mental health conceptualised as a dynamic balance across key tensions
- Tensions experienced in core experience domains; the doctoral researcher, the supervisory relationship, and the system

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Abstract

Doctoral researchers (DRs) appear at elevated risk of mental health problems and poor wellbeing during the PhD process, yet there is limited high quality research in this area. We aimed to derive a conceptual model of DR mental health risk and protective factors using thematic analysis of focus group data. The model positions mental health as reflecting dynamic balance across key tensions characterising the doctoral experience (chaos-cosmos, product-person, agency-acceptance, social-individual, safety-authenticity) within core experiential domains; the doctoral researcher, the supervisory relationship and the system. Individual factors, including historical and personal characteristics, impact on mental health and the expression and balance of key tensions. Key practice recommendations include supporting DR mental health with a whole university approach rather than intervention silos.

Keywords:

doctoral; postgraduate; higher education; qualitative; mental health; wellbeing; risk; vulnerability; protective; occupational; supervisory relationship; supervision

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Introduction

The mental health and wellbeing of doctoral researchers (DRs) is a topical yet contested issue. It has been suggested that DRs might be less vulnerable to and better able to cope with mental health problems than undergraduate or postgraduate-taught students (Waight & Giordano, 2018). However, emerging research points toward a mental health 'crisis' with at least a substantial minority of DRs experiencing clinically-relevant mental health problems—especially depression and anxiety—with prevalence among DRs greater than highly-educated working professionals (Evans, Bira, Gastelum, Weiss, & Vanderford, 2018; Levecque, Anseel, De Beuckelaer, Van der Heyden, & Gisle, 2017). The wider context suggests that mental health problem prevalence is increasing among young people and adults, and especially amongst students (Jorm, Patten, Brugha, & Mojtabai, 2017; Pitchforth et al., 2019; Thorley, 2017). Problems experienced prior to entry into higher education appear to persist throughout and beyond this transition (Zivin, Eisenberg, Gollust, & Golberstein, 2009). Nonetheless, empirical research regarding DR mental health, and risk and protective factors, is limited (Mackie & Bates, 2019).

Risk and vulnerability factors generally implicated in mental health problems are likely relevant to DRs, such as trauma and adversity (Niarchou, Zammit, & Lewis, 2015). More specific factors are additionally of interest; those associated with higher education generally (Thorley, 2017) and more uniquely associated with the research doctorate (Mackie & Bates, 2019). In a systematic review of the literature (Hazell et al., under review), we identified individual DR mental health problem vulnerability factors including isolation, poor

social support and perfectionism, and systemic factors including the sectoral positioning of ‘suffering’ as prototypical for DRs.. Protective factors included accessing multiple social groups, and connecting with hope, meaning and authenticity. However, this review was limited by the small number of qualitative studies, which mainly collected qualitative survey data, precluding a rich, free-flowing researcher-participant dialogue involving iterative researcher enquiry. Furthermore, previous studies often failed to focus on mental health problems specifically and few were conducted in the UK. We aimed to address these limitations by capturing rich in-person qualitative data in relation to our research question: what risk and protective factors impact on mental health and mental health problems for DRs? We were especially interested in risk factors for the development or exacerbation of mental health problems *versus* those that protects against such experiences and scaffolds positive mental health. We sought to derive an evidence-based conceptual model of the development and maintenance of mental health and mental health problems.

Materials and methods

Design and procedure

A qualitative cross-sectional focus group design was used to collect data from DRs across disciplines in one South-East UK university. The current analysis focussed on the derivation of a conceptual model of DR mental health. This analysis is embedded within a larger study in which the focus groups collected further data on DRs’ lived experiences of mental health and help-seeking. Ethical approval was obtained from the University of Sussex Sciences & Technology C-REC Committee (Reference: ER/CH283/12).

The focus groups were publicised via emails, intranet and campus advertisements and were held in campus meeting or teaching rooms, lasting 1:33:53 to 1:52:15 (*M*= 1:41:17, *SD*= 9:32) and facilitated by at least two co-authors (CB, CH, LC). Participants first provided

written consent and demographic information. Following completion, participants were given support service details and a £5 voucher. Facilitators introduced themselves as having experience of postgraduate study (LC), research (CB,CH), and supervising (CB) and supporting DRs (LC); emphasising the aim of conducting a genuine piece of research in which the DR voice—including critical perspectives—would be foregrounded. Consequently, facilitators occupied both insider and outsider perspectives (Braun & Clarke, 2013) with some shared lived experience, although—as native White British females—less so with respect to issues of ethnicity and internationality.

Setting and sample

A convenience sample of DRs was sought representing the institution's range of academic disciplines, resulting in two focus groups each for science, social science, and arts and humanities. The university was ranked in the world's top 150 (Times Higher Education, 2018) with over 75% of its research activity considered world-leading or internationally excellent (REF 2014). The institution's DR population (N= 1330) was 49.9% female, 49.8% male and 0.2% other, aged 21-76 years (*M*= 33.29), 66.4% full-time and 46.1% self-financing. Focus groups ran in May-June 2018.

We anticipated approximately five attendees per group and considered 30 an adequate total sample (Braun & Clarke, 2013). Forty-seven people expressed interest, thirty-two of whom participated (Table 1). Groups ranged from two to nine attendees (*M*= 4.80, *SD*= 3.42) with 13 (56.3%) science, 11 (34.4%) arts and humanities, and 8 (25%) social science DRs. Most participants (*n*= 19, 59.4%) reported mental health problems, most of which were current (*n*= 12, 37.5%) and associated with a mental health professional diagnosis (n= 10, 31.3%).

INSERT TABLE 1 HERE

Data collection

A semi-structured discussion guide was derived in consultation with DR representatives. Participants were asked about their mental health and wellbeing, and relationships with supervisor/s, peers, academics, and professional services (e.g. administrators). Data were collected using two electronic voice-recording devices. The best quality recording was transcribed verbatim (four by a transcription service, one each by CB and LC). All transcripts were accuracy-checked by CB and LC.

The focus groups were notably warm and supportive exchanges, with many participants emphasising the therapeutic nature of sharing their experiences. Attendees often exchanged contact details to facilitate ongoing peer support. We identified many participants taking a ‘meta’ perspective; reflecting on both the research process—i.e. the positive experience of discussing their perspectives amongst peers—and the potential impact (or lack thereof) of the research itself, i.e. how the findings could influence institutional and sectoral practices.

Data analysis

We conducted an organic inductive thematic analysis (Braun & Clarke, 2013) following Braun & Clarke's six steps (Braun & Clarke, 2006, 2013, 2016); 1. re/reading and generating familiarity with transcripts; 2. coding units of text in each transcript with phrases capturing discussion potentially relevant to research questions; 3. reviewing coded extracts to identify patterns within and across focus groups that reflect a central organising concept, then organising and refining these patterns using electronic thematic maps to enhance trustworthiness (Nowell, Norris, White, & Moules, 2017); 4. creating theme summaries to assess coherence and distinctiveness, and reviewing candidate themes against coded transcripts to increase analytic rigour (Braun & Clarke, 2013; Nowell et al., 2017); 5. delineating and naming themes; and 6. describing the findings.

In order to develop a conceptual model, steps 3, 4 and 5 were overlapping iterative processes within which we created diagrammatic and tabulated typologies to map examples of the tensions and their extreme poles, and to build a sense of unification across experiences, tensions and different contexts in which these tensions appeared to manifest. We compared across data, codes, themes and transcripts during this process. This mapping provided the framework for the conceptual model presented here. We saw the themes themselves and the conceptual model as our active creation, i.e. not spontaneously emerging from the data (DeSantis & Ugarriza, 2000); albeit data-driven, for we did not consult or deductively apply prior theory but rather analysed inductively. We elaborated from the data at times to provide a more coherent analysis (Braun & Clarke, 2013; Fletcher, 2017). Although data-driven, we do not suggest our analysis was a-theoretical or assumption-free. We acknowledge our starting position as assuming great complexity and individuality within both the doctoral research experience and mental health problems; the latter we understand broadly using bio-psycho-social explanatory models.

We took a critical realist epistemological stance, which assumes a true, shared reality perceived through a veil of individual experience and interpretation, yet is influenced by underlying social mechanisms that produce these events and influence their empirical observation (Danermark, Ekstrom, Jakobsen, & Karlsson, 2002; Fletcher, 2017). Coding and thematic processes were thus focused on identifying demi-regularities (apparent trends) across people and disciplines, being mindful of social structures that affect and are affected by human agency and may explain themes whilst accounting for contradictory demi-regularities (Bhaskar, 2014; Fletcher, 2017).

Dependability was enhanced through CB maintaining an analytic diary to record decisions, reflections, and resonations with own experiences (Nowell et al., 2017). Credibility of our themes and over-arching conceptual model was enhanced by inviting one focus group attendee (SV) to conduct a member check (Nowell et al., 2017) by reviewing face validity and criterion validity, i.e. the 'fit' of codes and theme structure with the respective transcript, and her personal experiences and recollections.

Results

We conceptualise DR mental health as a dynamic balance across key tensions characterising the doctoral experience (Figure 1). Imbalances appear to be associated with the development or exacerbation of mental health problems. Antecedent and contemporaneous factors (individual factors) affect mental health and the optimal dynamic balance for each DR; namely pre-existing mental health problems, past and current trauma and adversity, and demographic and personality characteristics. The key tensions (chaos-cosmos, product-person, social-individual, safety-authenticity, agency-acceptance) operate across three core spheres of experience; the DR (self-experience, identity and the day-to-day 'task' of thesis production), the supervisory relationship, and the system (department/school/university and/or academia). The findings are presented with illustrative quotes, identifying focus group

discipline in parentheses; science (S), social science (SS), arts and humanities (A&H). Further examples of imbalance are presented in Table 2.

INSERT FIGURE ONE HERE

Individual factors

DRs emphasised the impact of pre-existing individual factors that appear to function as input factors through impacts on the experience of tensions and the nature of dynamic balance; all of which cannot be divorced from the individual's historical and current context. For example, pre-existing mental health difficulties, and historical and concurrent adverse life experiences, may all confer vulnerability experiencing mental health problems during the PhD; ; "*I had anxiety since I was a kid…I actually discovered it when it got out of hand during the PhD*" (A&H), "*…whether it's illness or bereavement or whatever…it seems very rare that people get through the whole three or four years without a period…of being really shaken"* (A&H). Moreover, DRs suggested that there may be shared characteristics among people choosing to do a PhD, for example being particularly "*ambitious*" (S) or "*anxiety-driven"* (SS), which could encourage extreme working practices, "*… if it's like 4pm and…my experiment hasn't worked, immediately my brain is like "Well you should start it again and leave work at 10pm…finish it, get it right"…"* (S), thereby contributing to poor mental health through exacerbating chronic stress and fatigue. International status produces additional financial, socio-cultural and bureaucratic adversity that increased the risk of mental health problems; *"The pressure on international students, apart from even the normal PhD requirements and policy…that alone will crush someone"* (A&H).

In addition to conferring vulnerability to mental health problems, these pre-existing factors shape the dynamic balance across the tensions characterising the doctoral experience.

For example, DRs who are especially vulnerable perhaps through historical mental health problems or international status, may be less able to exert agency and might want to accept a more directive supervisory style. Individual characteristics such as age and cultural background appear to also shape preferences and needs relating to the tensions; for example, age may enhance the degree to which DRs want and feel able to experience authenticity; "*…if I had been younger when I started my PhD, I would not have been able to be as honest about how I felt."* (S).

Tensions

Chaos versus cosmos.

This tension reflects a conflict between chaos—which represents uncertainty, confusion, and disorder yet also growth and freedom—and cosmos, which reflects meaning, order, and tradition yet also rigidity.

The DR. The chaos-cosmos tension manifested in a sense of the DR identity and the production of a thesis being uncertain and confusing, yet also overly prescriptive. There was a salient sense in which the DR identity was experienced as liminal ; "*I know the title is 'PhD student', but we do something different. We don't go to lectures. We are developing research*" (SS), with DRs especially struggling to identify when they would cease 'becoming' and 'become' an academic. The PhD itself was described as inherently undefinable and overwhelming: "*…my office have like a running thing of 'What is a PhD?' 'Define a PhD'…[I]t's such a vague thing…there's no real good/bad PhD at the end, but somehow everyone's thinking 'Oh my PhD is bad'*" (S). The sense of liminality and uncertainty extended beyond the present moment to encompass future imagined identity confusion; "*…the financial insecurity… where you're going to base your life, what you're going to be doing with your life,…instability is…a big undercurrent*" (A&H), "*…the stress*

and anxiety of what's going to happen after, it's quite there even from the beginning" (SS), Consequently, DRs appeared to be engaged in a process of constantly attempting to find meaning. The PhD was an opportunity for meaning-making "…*I needed an outlet for some of the thoughts I was having, and I sort of dreamt up this research project*" (SS); yet a space so open and boundless that exploration could continue *ad infinitum*; "*You don't want to just mess around and waste a huge amount of time…struggling…*[I wanted] *something meaningful which has…logical concepts and it makes sense*" (S). Consequently, DRs appeared stuck in cycles of constantly vetting their own performance, "*Am I working enough? Am I working too much?*" (S), yet struggling to understand or articulate their progress; "*I can't put it into words how much my progress is*" (SS). DRs appeared to seek additional sources of meaning-making through the broader DR identity beyond the immediate PhD, for example through teaching, however, such meaning-making activities could cast further confusion over their role and focus; "*What has really helped me, not with my anxiety, but generally to give me a comfort…was teaching…an absolutely productive…experience, even, unfortunately, at the expense of my research*" (SS). **Supervisor relationship.** The chaos-cosmos tension was reflected in the fluid and unclear yet also unyielding supervisor role; *"…training PhD students however they see fit, there's no advisory body [or] hard and fast rule" (S).* Supervisors were described as changeable and incomprehensible with respect to communication and interpersonal responses, *"…there can also be ebbs and flows in how they respond" (S),* with DRs desiring to better understand and accurately predict supervisors' actions. However, supervisors were also perceived as too rigidly sticking to their own rules about what they would provide as supervisors. This included being seemingly reticent to provide the teaching and mentoring they wanted; *"…they are scientists or researchers…not teachers; but we are still, to an extent, students…they look at you like; 'Well, why aren't you learning?'…Well, because you aren't teaching me!" (S).* DRs spoke of feeling that assigning

supervisors based on the research area studied was too rigid, *"it's the topic and the area of research that kind of guides who is going to be your supervisor…"* (SS), and does not allow for exploring what relationship may best support the DR; *"But I'm thinking that the mix of supervisors could actually be maybe tailored…you do need a balancing there" (SS),* for example, ensuring a balance between supervisors who focus on theory and academic meaning versus pragmatism and practical tasks.

The system. The chaos-cosmos tension manifested as DRs' struggle to identify their place in the system. DRs suggested that the university was predisposed to identify them as students, which did not reflect their experience "*I feel we're more than researchers, most of the time we're treated as students, which in my opinion is not so fair*" (SS). This conflict left DRs feeling both connected and separate to the university; "*…we are like ghosts in the campus. We are part of the faculty, but we are not*" (A&H). DRs who sought a greater sense of current and future-imagined meaning and institutional connection through teaching felt confused or disappointed by the sector's apparent dismissal of its importance, both directly and indirectly though not funding secure teaching posts:

> *I began formulating a possible separate path that doesn't include teaching and higher education even though that's the reason I started a PhD. And I'm self-funded, I'm working my butt off to be here...so it has to have meaning* (A&H).

Product versus person.

This tension reflected the tendency to 'productise'—focus on objects, states, outputs and outcomes—versus 'personalise— focus on people, personal experiences, and processes.

The DR. The product-person tension manifested mainly in DRs' sense of enmeshment with their PhD; objectifying and productising themselves whilst simultaneously conceptualising the PhD as the personification and manifestation of their personal identity. The productisation of self was reflected in DRs' apparent sense of feeling depersonalised, wholly cerebral, "*I am unable to inhabit a place where I'm not thinking*" (SS), and unable to view themselves other than as a means to research production; *"…there's no breathing space to make time to do the things that are actually going to make you better…you think you're going to feel better once you finish this bit of work"* (SS). DRs appeared to feel disconnected from the physical self, "*I'm looking for a waitressing job actually just so that I can move and do things…just be very as physical as possible*" (SS), and from other aspects of their personal identities:

I keep having this…internal fight, okay I have to go back at 2:30, 3:00 to pick up my daughter and then I have to do other things and then go back to [the PhD] *late night…a constant…fight between the distractions that are not distractions, that are actually life that's happening*. (SS)

Consequently, DRs were less able to engage practically and psychologically with important life events, both developmental, "*adulting without a home*" (SS), and tragic; "*…when I lost my brother it was like, oh, he's gone. 'What can I do about it?' I should be positive about it and just going on with the deadline…I can't afford to just stop and be thinking about things*" (A&H).

Simultaneously, however, the PhD was positioned as "*such a strange, privileged*" (A&H) personal pilgrimage or indulgence as opposed to a 'job' or 'product'. DRs thus appeared reticent to disclose suffering within what others might consider to be a luxury experience:

S1: …*when* [family members] *know that I'm doing a PhD, there's high expectations. So, if I'm struggling personally, I can't really say actually it's tough…*

S2: *...my family or close community, they see me as doing a PhD as something like a big achievement...they see it in a much better or a higher way than it actually is...they don't really expect me to go through some tough moments.* (SS)

The supervisory relationship. A tension was evident in the need for supervision to focus on the PhD product (i.e. thesis) to ensure DRs maintained the attention and momentum necessary for completion; "*…it's not that the supervisors don't treat me as colleagues...I have to finish my PhD in a limited...time; that is always a spectre of conversations*" (SS), yet not to the extent that DRs were treated as means rather than as ends in themselves; "*…some supervisors...are very...very focused on the papers, on the outcome of the research, and not as much focused on the career* [or] *personal development of the PhD student*" (S). DRs were unsure whether supervision could focus on personal experiences and mental health, yet ultimately emphasised the 'professional' could not be divorced from the 'personal':

I developed high anxiety, hypervigilance and depression…[I]*t took me a long time, and a lot of pressure from a friend, to actually tell my supervisor...I thought it was a private thing. I thought it has nothing to do with the work but, actually, it has everything to do with the work.* (A&H)

Yet even if discussing mental health was considered permissible, DRs suggested supervisors were so habituated to providing directive research supervision that any such discussion would invariably take a similar shape:

...any conversation with my supervisor...I'm seduced to...talking about my work…[I'd] *like the opportunity, but...wouldn't feel comfortable saying 'Oh this thought is driving me mad', because then the discussion is about the thought and not about why I'm like that...*[T]*hat would ultimately mean talking about my work and I don't want to do that all the*

whole time…I don't want someone to say, 'Oh, you should look at this reading or that reading.' (SS)

The system. The product-person tension was evident in DRs' feeling that their personhood was tied to their status and treatment within the system. DRs described themselves as being 'productised' i.e. used as income, research and teaching resource, as opposed to treated as autonomous individuals; "*…this tendency just to get* [DR]*s on the books…because it makes the university bigger and seem more at a higher level, but us poor mutts that are going through the system don't always get what we need*" (A&H). However, should the PhD be perceived as failing, DRs felt this was seen to be indicative of their 'person' (character, capabilities and actions), as opposed to the 'product' (PhD opportunity, resources and support provided):

It's a weird, weird thing because if you're running a marathon and you twisted your ankle…people would be like 'This is a hard marathon', whereas if you do damage yourself mentally during a PhD…the assumption of the establishment is 'Ah well, you couldn't do the PhD'. (S)

Agency versus acceptance.

A tension was evident between the importance of DRs' personal agency versus the acceptance of and acquiescence to others.

The DR. There was tension around DRs wanting to feel agentic and adult but acknowledging their inexperience and need for guidance and direction from others. . DRs emphasised the importance of being self-reliant, prepared to identify problems, and able to cope with the challenging PhD process; "*I'm going to have to be maybe a bit sort of vigilant with myself and a bit kind of prepared and…have some kind of plan in place for how I deal with moments when I don't feel very good in doing the PhD and what I do with that*" (SS). Nevertheless, being self-agentic was a double-edged sword, "*…this great responsibility of being able to figure stuff out for yourself*" (A&H), and DRs required at least some directive guidance in the context of their uncertainty regarding PhD tasks; "*…what we need to calm you down, to get you through, somebody telling you write like this and write like that or how to interview*" (SS). DRs' described an unstable sense of self-agency in relation to accomplishment; taking sole responsibility for any failures yet struggling to locate themselves in successes. This meant that successes did not generate greater hopefulness or self-efficacy:

…if you do succeed in getting the data that you need and you produce the publication...you can chalk it all up to the fact that the data [were] there…it was really all down to chance and the data [were] waiting to be found. Any person could have done that. So, the publication is...well, it's great, but it doesn't give me any confidence. (S)

Moreover, DRs described wanting to take control of their own mental health and wellbeing rather than be subject to enforced bureaucratic processes; "*I don't think it would have worked for me to have a process in place that I knew I was meant to formally engage with*" (SS), "*…it might have been a bit strange to find…there was some formal process going around this duty of care that was about treating me as somebody that couldn't make decisions for themselves and decide when to let people know what was going on*" (SS). However, the very nature of mental health problems, in which people might not perceive a need for treatment or might not feel able to seek help, meant sometimes needing to accept outside direction; "*…it's difficult to even make that first move…. and go specifically and ask for help*" (A&H).

The supervisory relationship. A tension was evident in the supervisory relationship as providing guidance whilst scaffolding self-agency development. DRs reported that supervisors were often too dictatorial whilst simultaneously expecting unrealistic autonomy; "*…your supervisor is like 'You're a PhD, you just deal with it somehow'…*[there's a] *lack of education…to understand the needs and the capabilities of PhDs. We are not like the post-docs; we are just there to learn" (S).* DRs appeared to feel powerless to challenge unhelpful or undermining supervisory practices within the inherently asymmetrical relationship, but—whilst not wanting to reinforce a culture of total acquiescence to supervisor demands—wanted to exercise self-agency in improving their own situations:

> …[In] *a perfect world…my supervisor*[']*s just better at his job, but…I am not benefitted by wishing for him to improve, I am benefitted by learning how to deal with him. I can't make him change; I can only do things for me*. (S)

The agency-acceptance tension also manifested in real and imagined supervisory responses to mental health disclosures. DRs wanted supervisors to appropriately gauge how much directive guidance to provide whilst noting that they themselves were unsure about

what was appropriate and the extent to which the relationship is a pastoral one; *"…it's a weird balance…the duty of care thing. Maybe it would be clearer for somebody to intervene…if they were seeing somebody as more of a minor, as more of a child"* (SS).. DRs consistently express a need for increased support in relation to decision-making around mental health and help-seeking; "*…it's too much responsibility I guess, in our ages…we are thinking about research, plus advisor, plus ourself, our mental health, plus our physical health. A lot of things*" (S). Supervisors were important in legitimising and facilitating support-seeking; "*…it was my supervisor who was like 'No, you really should* [access university counselling]*, you are eligible, take it when it's there*" (A&H). For serious problems, DRs acknowledged that their poor mental health literacy means that supervisors would need to assertively direct them to help ensure their safety; "*…it really saved me…they pointed out towards the counselling services...They told me what to do. They weren't going to be my therapist, of course…but they were there to make sure that I addressed my issues*" (A&H).

The system. The agency-acceptance tension was reflected in perceptions that the system reinforces expectations that DRs should autonomously manage their PhDs and their mental health, whilst simultaneously endorsing supervisory and sectoral practices that undermine DR self-agency and wellbeing; *"...supervisors are not willing to change and no other supervisors will hold them accountable*" *(S).* DRs reported that the sector avoids formal expectation or regulatory enforcement of supporting their mental health, preferring to accept the burden of mental health literacy and guidance as falling implicitly on a minority of mainly female academics; "…*men, male lecturers, need to step up…It's not necessarily about having a lunch and where probably mainly female supervisors would turn up and talk about these things*" (A&H).

Social versus individual.

The tension in social versus individual reflected the nature of doing a PhD as a social versus individual endeavour.

The DR. A tension between the social and the individual was evident in the importance of having social identities and support but the difficulty of reconciling these with the DR identity. DRs desired a tangible, visible sense of collectively working in a community, a *"...rhythm to your work-day that everybody is participating in, so you're not by yourself"* (SS), yet the reality was more one of isolation. The shared working and social spaces needed to scaffold support, belonging and learning,*"...a space here at the end of the corridor that is maybe for me or maybe I can go there if I'm really upset,…an established space can act as a…form of support"* (A&H), were infrequently available;*, "...there no space on this campus where…five of us can sit down and just yap without the undergrads constantly taking that space…we talk so much about informal learning and…we don't have a space for PhD students…Places need to grow"* (SS). Where DRs did have opportunities for

peer interaction, this was not sufficient to generate social connection as DRs were reticent to make tiring social efforts within an ephemeral context, *"You make a big investment to be friendly with people and then they leave you, so I think we get really bad at investing in new people"* (S). Moreover, peer interactions encouraged a sense of competitiveness and negative self-comparisons; *"If you get a group of* [DR]*s together…I can convince myself that I am not working hard enough because look at all their brilliant achievements"* (S).

Outside the institution, social relationships and support were considered protective against mental health and wellbeing problems:

[I] *was…incredibly well supported* [with] *a really good network of family and friends. And…a very long-term relationship when I started it.* [E]*verything seemed secure enough to support any issue that might come up. So, it didn't…cross my mind for a second that* [mental health] *would become an issue that I couldn't deal with*. (SS)

These external social relationships were, however, as complex and challenging to sustain as those within the institution: *I broke up with my ex when both of us were on fieldwork…I probably needed to be with my old friends or my family for longer and then that was the moment when I had to leave*. (SS)

The supervisory relationship. The social-individual tension manifested in supervisory relationships as social relationships versus atypical and asymmetric sets of interactions; "*I expected that I'd have a supportive mentor as a supervisor. She has been really good but…very clear that she is not my friend*" (A&H). The location of interactions determined their nature; typically, supervisors were encountered only in formal spaces that belied opportunities for more social interactions:

…the one person I would feel comfortable talking to [about my wellbeing]*…I see sitting around in our shared kitchen and like* [to] *have chats with her….* [Facilitator: *But not your supervisors?] I never see my supervisors in any shared areas*. (A&H)

Furthermore, supervisors were perceived as frequently violating social interaction norms; "...[my supervisor's] *feedback is 'This is terrible, what's wrong with you?'"* (S). Presumed reasons for these violations included a lack of knowledge and caring, "*…the research exists out there that that's not a nice way to talk to people, but he hasn't read it"* (S), lack of interpersonal and management skills, "[supervisors] *might be amazing scientists, but they have never been trained in any human skills…*[or] *managing collective people*" (S), and extreme busyness; *"…they have a certain amount of hours in the week and…children and wives…they* [take] *the quick and easy option which is 'This is* [how] *I've done it with my past 12* [DR]*s, gonna to tell ya that ya rubbish again'*" (S). Consequently, DRs struggled to balance their needs for support and connectedness against the perceived needs of their supervisors, "*…even though I was struggling quite a lot socially…I didn't want to burden them by telling them*" (SS), and were reticent to request additional social support or help in connecting with the broader academic community; "*…they're stressed and it feels like a lot to say to them…'Can we talk to you more, can we get to know you in a social setting, can you come to a party*?'" (A&H).

The system. A social-individual tension was evident in that DRs wanted a sense of belonging but finding university community to be lacking or exclusionary; "…*there's quite a big disconnect between me as a PhD student and other PhD students and the faculty*" (SS). DRs felt that the university was not meeting its remit around supporting supervisors to then support DRs; "…[supervisors] *are not given the time to deal with our issues…to deal with me kindly, if they are too tired they are going to talk to me in an unkind way*" (S). If departments themselves or sectoral issues (such as strike action) offered increased informal and social contact with academics, DRs struggled to move between insider and outsider—colleague and student—positions; "*I do see us as colleagues…we are in increasingly the same…meetings around* [strike action]…*we're all in the same boat and…switching between that feeling and then feeling that we're actually students asking for something else or additional…can be a bit hard*" (A&H). Moreover, there was a fragility to the enhanced sense of community arising in the context of strike action which emphasised sectoral divides; "…*it's hard to feel part of the community if that community is feeling really under threat*." (A&H).

Furthermore, DRs again appeared to struggle in weighing their own needs against those of others. DRs described a process of self-triage in which they avoided mental health support-seeking lest they reduce opportunities for other DRs or place additional burden on service providers; "*...if you can handle stuff you just power through it. And putting the pressure* [on university support services], *they're probably super overworked and overloaded*." (A&H)

Safety versus authenticity.

The safety-authenticity tension reflected challenges in balancing knowledge and insouciance, freedom and privacy, and in feeling able to live in accordance with one's values versus broader social and institutional norms.

The DR. The key safety-authenticity tension in relation to self-experience was experienced in two key ways. The first was a tension between studying for a PhD being a route to living authentically in accordance with one's values but also an unknown and potentially unsafe career path:

"*I didn't plan to leave my country originally…I had applied for a PhD there and the application didn't go through. And then I decided to apply to* [this university]*, but it was almost like a mindless decision. And then I got it. And I faced a, yes, I want to go, I kind of have to go now because it would be stupid to say no to this opportunity…But at the same time I didn't see many perspective for the future, because I left, at probably the worst moment of the economic crisis, so there was no possibility to find a job that matched my degree, my expectations*." (SS)

The second manifestation of safety-authenticity was the tension between being fully informed and open about oneself, health, relationships and career within the context of the PhD, versus the freedom, optimism and safety around not knowing or not communicating such issues. There was a tension between DRs wanting to be open and honest about their experiences within a community of others who are similarly open, *"…if you are honest, they are then honest back*" (S), yet feeling uncomfortable to discuss academic and mental health and wellbeing issues due to reputational concerns; "*…I don't want to give the impression that I'm already failing*" (S). As well as the more academic performativity, DRs described reticence to openly share negative feelings about the 'dark-side' of research and academia; *"…[a] need for a…where it doesn't feel wrong to have honest conversations…like 'I'm not enjoying this anymore' and 'This doesn't feel right'… 'I'm not having the time I expected, or we planned for'" (SS).*

When DRs did feel able to openly share their struggles relating to their PhD and mental health more broadly, this sense of authenticity not only conferred some risk of vulnerability for the sharer, but was seen to contribute to a potentially very negative atmosphere for DRs at large, in which everyone would struggle to identify positive experiences and accomplishments; *"I came here today and [from]…the first question, everybody said negative things and nobody thought to think of positive things" (SS).*

The supervisory relationship. The safety-authenticity tension was evident in DRs wanting to avoid supervisory conflict but feel that they were expressing themselves honestly and living in accordance with their values and principles. The inherent power asymmetry in supervision compounded DRs' sense that they needed to appease their supervisors, as not doing so risks serious career consequences; "*…your supervisor has so much power…they can either connect you to the rest of the academic community or make it really hard*" (S). This meant that DRs struggled to challenge unhelpful or undermining supervisory practices, which had consequences for their sense of authenticity, support and mental health and wellbeing:

> *…my supervisor* [will] *talk about my results, and why they're not so good, he'll talk about how long I've worked and why that's not enough…I over-promise to appease him…but I give myself too short a time and too much to do…I fail at meeting the insane expectations I made for myself based on him. I feel worse, he feels worse, he tells me I'm worse, and I sink a little bit. (S)*

The system. A tension between safety and authenticity was evident in the desire to witness open communication of sectoral issues, such as the perceived mental health ‘crisis’ amongst DRs and academics more generally, yet the sense that such open discussion could undermine DRs’ hopefulness and autonomy:

…social media is both a help and hindrance…it’s really supportive and good to see people come out and talk about stuff that maybe traditionally people aren’t happy to…But you also then get this barrage of ‘quit-lit’, around people being like ‘It’s too much…my mental health is more important than this sector.’...Although it’s really important for people to talk about that and for us to be aware that that is a thing and a trend, it’s also a bit like ‘Oh God, so does that mean if I stay academia I’m basically signing up to a life of poor mental health?’ I really feel that and that’s terrifying… so it’s always a push-pull between knowing it’s a thing and getting scared of it being a thing. (A&H)

In contrast to the perceived open, free-flowing social media dialogues, the university and broader sector was seen to prioritise its own reputational safety above acknowledging and responding to the issue of DR mental health:

...for [adequate support for DR mental health] *to be set up, the university would have to be taking a stance of ‘You’re going to get fucked up…We are accepting that our university and the doctoral programme is making people sick...so we are putting money aside to fix them.’ And that’s just insane* (S).

INSERT TABLE TWO HERE

Discussion

We derived a conceptual model that presents DR mental health as a dynamic balance across key tensions which manifest in core experiential domains of the doctoral experience;

the DR, the supervisory relationship, and the system. DR mental health and the nature of optimal balance are also impacted by individual factors, namely pre-existing mental health problems, trauma, adversity, and personality characteristics.

The tension-balance model thus reflects a way to consider the complex interplay between vulnerability and protective factors relevant to mental health and wellbeing that also accounts for DRs' individuality and subjectivity (Bendix Petersen, 2014), individual histories, characteristics, values and goals. This framework offers an explanation of deeper causal structures that might have explanatory power regarding the occurrence or exacerbation of mental health problems whilst also accounting for competing or contradictory demi-regularities (Fletcher, 2017). For example, DRs' pre-existing mental health problems and support might influence the optimal balance of agency and acquiescence should they experience challenges during the PhD process. Existing typologies of PhD stressors or challenges (Barry, Woods, Warnecke, Stirling, & Martin, 2018; Mackie & Bates, 2019; Pyhältö, Toom, Stubb, & Lonka, 2012) may position DRs as too homogenous and passive, i.e. suggesting that events impact on DRs and not vice versa, and that the same events impact all DRs in the same ways. Our model allows for the interaction of individual and environmental vulnerability and protective factors, positioning individual mental health and mental health problems as dynamic occurrences both affecting and affected by human agency (Bhaskar, 2014; Fletcher, 2017). Moreover, our work builds on that of Stubb and colleagues' who describe DRs' experiences of the academic community as burdensome or empowering (Stubb, Pyhältö, & Lonka, 2011) and their sense of meaning in conceptualising the thesis as a product, a process or both (Stubb, Pyhältö, & Lonka, 2012). These descriptions have some similarities to our product-person and social-individual tensions; however, our model unites the experience of these and other tensions within one overarching model. Furthermore, this model has a broader multisystemic focus; allowing for the consideration of DRs in additional

contexts (Stubb et al., 2011) and multidimensional relationships between individual DRs, supervisors and the wider system.

A multisystemic focus is particularly important as institutional and sectoral cultures appeared salient across all tensions and systemic factors appeared to filter through institutions impacting on supervisory relationships, professional service staff interactions, and DR peer encounters. Wider sectoral factors, such as the Research Excellence Framework may encourage prioritisation of outputs over people and associated institutional practices may perpetuate cultures of imbalance in which DRs feel productised, and struggle to find meaning, connection, self-agency, and a space to reflect openly and honestly on their experiences and imagined futures.

As a potential buffer between DRs and the wider institutions, a key area for more immediate positive impact on DR mental health is supervisory practice. There is a need for supervisors (and encasing institutions) to challenge their assumptions and pedagogy (Grant & Manathunga, 2011) and reflect on their contributions to the shaping and transmission of sectoral practices. In the present study, there was evident confusion regarding the nature, purpose and 'fitness for practice' of the supervisory relationship and the apparent presence of sanctions in discussing DR mental health. Contributing factors appear to be supervisors' lack of mental health literacy and confidence in how to broach and respond to student mental health disclosures (Hughes & Byrom, 2019) amidst the broader pressures and sectoral issues affecting all academics. However, the student-teacher relationship is invariably emotional (Hughes & Byrom, 2019) and DRs clearly desired supervisors to be better equipped to identify and respond sensitively to DR mental health and wellbeing problems. Therefore, supervision should be conceptualised as focusing on thesis production, the DR's broader professional development and pastoral issues including DR social and mental health and wellbeing. Morevover, supervision needs to be institutionally and sectorally valued as a core

academic competency, with time, space and encouragement for supervisors to engage in reflection, training and peer discussion around supervisory practice.

Overall, our findings support a 'whole university approach' (Hughes & Byrom, 2019) to DR mental health and wellbeing. Whilst there is evidently a need to provide evidence-based mental health support and interventions to DRs experiencing mental health problems, it is also necessary to position mental health and wellbeing as fundamental and salient to the DR experience and explore facilitators and barriers across occupational, educational, socio-relational, financial, psychological, cultural, and spatial domains. A whole university approach must also make space for disciplinary differences in the expression of tensions and balance. For example, in social sciences, arts and humanities the PhD may be practically solitary due to the lack of shared working spaces and practices and little direct contact with peers, whereas in sciences, PhDs may be more metaphorically isolated as the lab culture may provide peer interaction but also facilitate competitiveness. Moreover, an outside-of-university approach is also indicated to encourage DRs to maintain the outside interests and contacts to confer continuity of multiple positive personal identities in opposition to the experience of chaos, enmeshment and liminality characterising the doctoral experience.

Important research questions arise from our conceptual model, in particular evaluating the model's resonance with supervisors, their practices and their perceptions of DR mental health and wellbeing. More work is needed to explore the uniformity of the tensions, and whether the manifestation of these tensions and their extremes are more intense or vary in intensity across experiential domains. Moreover, increasing understandings of the interplay between individual demographic and vulnerability factors and how they shape the enactment and optimal dynamic tension-balance would help support the application of this model across diverse groups of DRs. Self-agency, a key domain of Snyder's cognitive hope (Snyder, 2000), appeared a particularly salient protective factor. Hopefulness is a robust predictor of

academic achievement (Nelson, 2014; Snyder et al., 2002), correlate of wellbeing, coping, positive health behaviours, and protector against depression, suicide and the impact of adversity on students (Dixson, Keltner, Worrell, & Mello, 2018; Griggs, 2017). How doctoral supervision can function as a hope-inspiring relationship—dynamically and responsively in scaffolding self-agency across stage and phase of study—and how this in turn may support DR achievement, meaning, authenticity, mental health and wellbeing, is a key area for further enquiry.

Limitations

Our aim was not to produce 'representative' or 'generalisable' account and as such our findings are inevitably somewhat culturally bound. That our sample of DRs reflects all major disciplines, modes and years of study, DRs with and without mental health problems, international and home students, and is inclusive of a broad age range supports broad transferability. Nevertheless, our model may be less generalisable to non-research-intensive institutions outside of the world's top 150 universities. Moreover, our sample were self-selecting and 'hidden voices' may not reflected here, for example, fewer males participated in our focus groups. Whilst the capture of varied—including critical—thoughts and experiences provides assurance that focus group attendees felt able to openly share their experiences, it is possible that alternative facilitators (e.g. true peer or completely external) may have resulted in the elicitation of additional data.

We noted, as reflected by participants themselves, that the proximity of the focus groups relative to strike action likely intensified the salience of concerns regarding community, censorship, and sectoral and institutional instability and thus,strike action appears a contextual condition which affected the observed phenomena (Fletcher, 2017). Nevertheless, issues around sense of community, career instability and institutional

censorship manifested more broadly and in relation to other issues around DR mental distress. We also wondered about the potential impact of the ‘meta’ perspective taken by some participants. There were some clear expressions of futility, for example participants suggesting that those supervisors who would benefit most from learning about DR mental health and wellbeing are the least likely to engage with outputs from this project, such as this paper. We suggest that such expressions did not mean that DRs’ were constrained in their responses. Instead, we suggest that such futility was an incredibly important reflection of DRs perceiving academics, institutions and the sector as unwilling to challenge the embedded practices which undermine DR mental health and wellbeing; with this perceived unwillingness itself further threatening DRs’ hopefulness, belonging and mattering.

Conclusions

DR mental health can be understood as individually optimised, dynamic balance across key tensions characterising the doctoral experience. These tensions reflect the need for the PhD experience to be dynamically balanced with respect to the liminality versus meaning (chaos-cosmos), a focus on outputs versus wellbeing and development (product-person), the negotiation between supervisory and institutional guidance and support versus the space for the development and exercising of self-agency (agency-acceptance), risks and rewards associated with social connection (social-individual), and the provision of authentic information about the PhD and broader academia versus the preservation of individual freedom and unique experience (safety-authenticity). These tensions are enacted across three key domains; the DR’s identity, self-experience and production of the PhD itself (the DR), , their supervisory relationship/s, and the broader institution and sector (system). This conceptual model has clear research and practice implications, including the need to consider

how a whole university approach can best support DR mental health and wellbeing within a supportive, authentic, hopeful, reflective and well-resourced environment.

References

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*, 1–16. https://doi.org/10.1080/07294360.2018.1425979

Bendix Petersen, E. (2014). Re-signifying subjectivity? A narrative exploration of 'non-traditional' doctoral students' lived experience of subject formation through two Australian cases. *Studies in Higher Education*, *39*(5), 823–834. https://doi.org/10.1080/03075079.2012.745337

Bhaskar, R. (2014). *The possibility of naturalism: A philosophical critique of the contemporary human sciences*. London: Routledge. https://doi.org/10.4324/9781315756332

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. London: Sage Publications Ltd. Retrieved from http://eprints.uwe.ac.uk/21156/3/SQR Chap 1 Research Repository.pdf

Braun, V., & Clarke, V. (2016). (Mis)conceptualising themes, thematic analysis, and other problems with Fugard and Potts' (2015) sample-size tool for thematic analysis. *International Journal of Social Research Methodology*, *19*(6), 739–743. https://doi.org/10.1080/13645579.2016.1195588

Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology*, *12*(3), 297–298. https://doi.org/10.1080/17439760.2016.1262613

Danermark, B., Ekstrom, M., Jakobsen, L., & Karlsson, J. ch. (2002). *Explaining society: An intriduction to critical realism in the social sciences*. London: Routledge. https://doi.org/10.4324/9780203996249

DeSantis, L., & Ugarriza, D. N. (2000). The concept of theme as used in qualitative nursing research. *Western Journal of Nursing Research*, *22*(3), 351–372. https://doi.org/10.1177/019394590002200308

Dixson, D. D., Keltner, D., Worrell, F. C., & Mello, Z. (2018). The magic of hope: Hope mediates the relationship between socioeconomic status and academic achievement. *The Journal of Educational Research*, *111*(4), 507–515. https://doi.org/10.1080/00220671.2017.1302915

Evans, T. M., Bira, L., Gastelum, J. B., Weiss, L. T., & Vanderford, N. L. (2018). Evidence for a mental health crisis in graduate education. *Nature Biotechnology 2018 36:3*.

Fletcher, A. J. (2017). Applying critical realism in qualitative research: Methodology meets method. *International Journal of Social Research Methodology*, *20*(2), 181–194. https://doi.org/10.1080/13645579.2016.1144401

Grant, B., & Manathunga, C. (2011). Supervision and cultural difference: Rethinking institutional pedagogies. *Innovations in Education and Teaching International*, *48*(4), 351–354. https://doi.org/10.1080/14703297.2011.617084

Griggs, S. (2017). Hope and mental health in young adult college students: An integrative review. *Journal of Psychosocial Nursing and Mental Health Services*, *55*(2), 28–35. https://doi.org/10.3928/02793695-20170210-04

Hughes, G. J., & Byrom, N. C. (2019). Managing student mental health: The challenges faced by academics on professional healthcare courses. https://doi.org/10.1111/jan.13989

Jorm, A. F., Patten, S. B., Brugha, T. S., & Mojtabai, R. (2017). Has increased provision of treatment reduced the prevalence of common mental disorders? Review of the evidence from four countries. *World Psychiatry*, *16*(1), 90–99. https://doi.org/10.1002/wps.20388

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. https://doi.org/10.1016/J.RESPOL.2017.02.008

Mackie, S. A., & Bates, G. W. (2019). Contribution of the doctoral education environment to PhD candidates' mental health problems: A scoping review. *Higher Education Research & Development*, *38*(3), 565–578. https://doi.org/10.1080/07294360.2018.1556620

Nelson, K. (2014). *Academic progress in doctoral students: Levels of hope, subjective well-being, and stress*. Walden University. Retrieved from https://search.proquest.com/openview/c67b1e21862b0f2461fdad258f25e5d1/1?pq-origsite=gscholar&cbl=18750&diss=y

Niarchou, M., Zammit, S., & Lewis, G. (2015). The Avon Longitudinal Study of Parents and Children (ALSPAC) birth cohort as a resource for studying psychopathology in childhood and adolescence: A summary of findings for depression and psychosis. *Social Psychiatry and Psychiatric Epidemiology*, *50*(7), 1017–1027. https://doi.org/10.1007/s00127-015-1072-8

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, *16*, 1–13. https://doi.org/10.1177/1609406917733847

Pitchforth, J., Fahy, K., Ford, T., Wolpert, M., Viner, R. M., & Hargreaves, D. S. (2019). Mental health and well-being trends among children and young people in the UK, 1995–2014: Analysis of repeated cross-sectional national health surveys. *Psychological Medicine*, *49*(08), 1275–1285. https://doi.org/10.1017/S0033291718001757

Pyhältö, K., Toom, A., Stubb, J., & Lonka, K. (2012). Challenges of becoming a scholar: A study of doctoral students' problems and well-being. *ISRN Education*, *2012*, 1–12. https://doi.org/10.5402/2012/934941

Snyder, C. R. (2000). *Handbook of hope: Theory, measures and applications*. San Diego, CA: Academic Press.

Snyder, C. R., Shorey, H. S., Cheavens, J., Mann Pulvers, K., Iii, V. H. A., & Wiklund, C. (2002). Hope and academic success in college. *Journal of Educational Psychology*, *94*(4), 820–826. https://doi.org/10.1037/0022-0663.94.4.820

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. https://doi.org/10.1080/0158037X.2010.515572

Stubb, J., Pyhältö, K., & Lonka, K. (2012). The experienced meaning of working with a PhD thesis. *Scandinavian Journal of Educational Research*, *56*(4), 439–456. https://doi.org/10.1080/00313831.2011.599422

Thorley, C. (2017). *Not by degrees: Improving student mental health in the UK's universities*. London. Retrieved from https://www.ippr.org/publications/not-by-degrees

Waight, E., & Giordano, A. (2018). Doctoral students' access to non-academic support for mental health. *Journal of Higher Education Policy and Management*, *40*(4), 390–412. https://doi.org/10.1080/1360080X.2018.1478613

World University Rankings 2018 Times Higher Education (THE). (2018). Retrieved May 28, 2019, from https://www.timeshighereducation.com/world-university-rankings/2018/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats

Zivin, K., Eisenberg, D., Gollust, S. E., & Golberstein, E. (2009). Persistence of mental health problems and needs in a college student population. *Journal of Affective Disorders*, *117*(3), 180–185. https://doi.org/10.1016/j.jad.2009.01.001

Tables/figures

Figure 1: The tension-balance model of doctoral researcher mental health.

Table 1: Participant characteristics.

	N (%)	M (SD)	Minimum - Maximum
Age		31.71 (9.00)	22-71 years
Gender			
Male	9 (28.1)		
Female	23 (71.9)		
Ethnicity			
White British	11 (34.4)		
White Other	10 (31.3)		
Chinese/Chinese British	4 (12.5)		
Asian/Asian British	3 (9.4)		
Black/African/Caribbean/Black British	3 (9.4)		
Other	1 (3.1)		
UK citizen	15 (46.9)		
First language English	17 (53.1)		
PhD status			
Full-time	27 (84.4)		
Part-time	3 (9.4)		
Fully funded	14 (43.8)		
Part-funded	10 (31.3)		
Self-funded	6 (18.8)		

1st year	12 (37.5)
2nd year	5 (15.6)
3rd year	6 (18.8)
4th year/5th year/Continuation	7 (21.9)

Note: We present data aggregated across all focus groups to protect participant anonymity.

Table 2: Manifestations of imbalance in key tensions across core domains characterising the DR experience.

Tensions	**The DR**		**The supervisory relationship**		**The system**	
	Manifestations of imbalance	***Example quotes***	***Manifestations of imbalance***	***Example quotes***	***Manifestations of imbalance***	***Example quotes***
Chaos	• DR identity liminal and confusing. • Acceptance of 'chaotic' DR experience undermines mental health help-seeking. • Confusion on the nature of	"*I definitely feel quite unknown as a PhD researcher or as a student…I think I feel better when I'm thought of as a researcher*." (SS) "*…it ends in quite a weird way* [you] *submit your thesis and…* [wait] *to have your examination and then there might be this period of time where you're working on your*	• Nature of supervision unclear. • Uncertainty regarding appropriatenes s of discussing mental health problems. • Lack of supervisor	"*It's very much up to the supervisors to create the structure…not all supervisors are interested or know that these would be appropriate for you*." (SS) "… [a senior academic] *said, "You are not polite. You are chasing after* [your supervisor] *too much," and I just asked*	• Uncertainty regarding available support services. • Uncertainty possible futures in academia. • Uncertainty regarding what	"*…the stress and anxiety of what's going to happen after, it's quite there even from the beginning*." (SS) "*…how we fit in this society which is very different from your ways of thinking; that makes me a little bit depressed*" (SS).

	the thesis, its timelines and progression. • Lack of progress markers undermines motivation • Uncertainty regarding what constitutes the 'working day'.	*thesis again or it might be that it's over*" (SS). "*That's half the struggle, when you're self-directed – working out how to manage your day*." (S) "*…everyday life is very hard in that sense…I don't know the last time I ate proper food, for instance."* (SS)	help with structure or progress markers.	*him how many times you should send exactly the same letter in order to get a response…without being accused of chasing after her too much*." (A&H)	is valued in academia. • International students struggle to understand complex socio-professional UK norms.	"*…I need to learn how to be British and that's hard…It's not about being polite, it's about acculturative things which cannot be put into words*" (SS).
Cosmos	• Prescriptive DR archetypes lead to unhealthy working	"*I have loads of friends…who are like "Maybe you should go home and rest or take a couple of days on it?" And I was just like "I can't, it's so*	• Time spent trying to meaning-make regarding supervisors'	"*…you've spent five hours sat down, really psychoanalysing your supervisor and trying to figure out the best way to put something to them, you'll go*	• Lack of academic freedom undermines innovation and	"*…the logic of the discipline overwhelms…everybody wants to know, so how does it fit in? …but I*

	practices. • DR tendency to dismiss social, leisure, and relaxation activities as not meaningful enough.	*important!*"" (S) "*I'm looking at a lot of cooking videos, even though it sounds trivial…*[I] *feel like it's a waste"* (SS)	behaviours.	*home now, it's five hours I didn't work on my PhD, that is so useless.*" (S)	prevent interdisciplinar y work.	*haven't had support for it.*" (SS)
Product	• Enmeshment of self with the PhD leads to loss of self-identity. • Conflating perceived failures in PhD tasks with sense	"*I don't want to think anymore, just not think" (SS)* *"I've just been quite a bad student…I have one job, which is to do a project and write a PhD and I just wasn't able to do that.*" (SS)	• Supervisors use DRs as research workers. • Supervisors do not provide support for personal experience, mental health or	"*There was a student...* [whose supervisor said] *"You're not contributing anything intellectual to this project" …The implicit message within that is …I'm only valuing you as somebody who can do this work, not as a whole person.""* (S)	• Reinforcing cultures of bullying and exploitation. • University seduces DRs without being able to provide requisite	"*…there is a tendency to proffer places, recruit DRs without really thinking collectively as to the faculties of the university, whether they…can really support* [the topic]." (A&H)

	of self-worth. • Lack of support for sensitive and challenging topics and methodologies. • Neglecting to consider the potential transformative experience of the PhD.		wellbeing. • Supervisors do not support DRs' personal development, e.g. reputation and network building activities.		resources to support PhD completion or mental health and wellbeing.	"*…the last person to leave the office is rewarded with a mention of it the next morning*" (A&H) "*…during the research if something were to occur* [that] *might change my life…you sense everybody only cares about when you finish your PhD rather than, how's this going to affect you, personally"* (S)
Person	• Focus on the personally transformative nature of the	"*…it's not the best thing you will ever do is not your PhD. That's how I'm thinking of it, that's how I'm coping with it*"	• Too much pastoral focus might impact on supervisor	"*…maybe it's a cultural thing, I don't feel comfortable talking about* [mental health and wellbeing]*"* (SS)	• Regulations focus on protecting the institution and	"*If your supervisor is truly the busiest one, then it's just unfortunate…it does not count as they do*

	PhD reinforces pressure and identity enmeshment • Conceiving of the PhD as a personal journey or transformation might add to the sense of pressure. • Focusing too much on personal development might distract from finishing	(SS) "*I started off thinking…I'm really ambitious, …I'll sign up for everything,…do research placements,…run conferences…I did all that, worked myself into the ground, got really really really stressed…and now* [if] *I get to the end with a workable accepted thesis…that's my line in the sand…* [At] *the risk of...disintegrating entirely… those ambitions have to take second place*." (A&H)	treating DR as emerging colleague. • Cultural differences limit personal disclosures. • DRs may feel ambivalent about accepting available informal support e.g. from postdocs.		academics, not on how to best support DRs.	*not fulfil their responsibility because the handbook is not clear. Even for supervision once a month, I was told it was just for the visa record. It's not required in the handbook*" (A&H)

	the PhD and increase stress and fatigue.					
Agency	• Feeling of sole responsibility for self-directing PhD work is overwhelming. • Mental health problems can hinder safe decision-making. • Mandatory mental health awareness-	"*...the trouble* [with] *mental health issues or crises…I really lose the perspective in it to be able to make quite clear, good decisions for myself*" (SS) *"*S1: *...feeling like….you should…have by now figured out how to support yourself.* S2: *I don't think anyone's ever fully figured it out!" (A&H)*	• DRs unlikely to disclose mental health and wellbeing problems unless supervisors explicitly invite and offer safe space to do so.	"*... at any stage in the PhD, if something is starting to get really difficult, the supervisor also needs to be able to pick up on that and give you the right advice.* *It's about supervisors providing students with a safe invitation rather than, like you were saying before, putting it all on the vulnerable person to say something*." (S)	•DRs unlikely to engage with non-mandatory mental health support and wellbeing workshops. •Non-mandatory social events have limited longevity.	"*…either gain the courage to knock on the door or you send an email? Are those the only two options for a student who has anxiety to choose?*" (A&H) "*...when* [my supervisor] *...a young female new faculty member… she had people queuing out the door for office hours even if they weren't really her*

	raising and support (e.g. at certain junctures like return from fieldwork) might be necessary due to poor DR mental health literacy and help-seeking self-efficacy.					*students …they didn't feel able to go to their male older dismissive supervisors*" (A&H)
Acceptance	• Feeling coerced into mental health and wellbeing support might	"*when…the shit hit the fan for me…I really disengaged with so much…The sense of being obligated to a process…would have made me distance myself*	• Power-play in supervision can undermine supervisee DR sense of agency	"*I had an email that I sent my supervisor saying "Okay, I get what you've said here, but I feel that you're being very disrespectful to me as a…PhD*	• Institutions may be too quick to try and offer interventions to 'solve' DR	"*Sometimes somebody just wants their personal experiences and not constant interventions"* (SS)

	feel threatening and risk disengagement. • Acceptance of difficult circumstances may undermine agentic action to improve PhD experience.	*even more*." (SS) "*I actively engaged in the department. I feel much better in terms of the loneliness and the alienating aspects of it*" (SS)	and hopefulness. • Perceiving supervisory practices as unchangeable can undermine DRs' sense of agency to improve their experience.	*and also as a colleague". And I got an email back from my secondary supervisor... "You're not a PhD yet and you're not a colleague". ...there is no point responding to that…You've literally said anything I say is pointless because I'm a child and I know nothing*." (SS)	mental health and wellbeing problems, whilst not challenging supervisors' autonomy even when detrimental to DR wellbeing.	
Social	• Social relationships outside of the PhD may lead to solitariness within the	"*…a lot of people don't join in on and maybe they've got completely full social lives*" (A&H) "*…you can almost be too supportive or too overlaying*	• Social intimacy in supervision may prevent open critique, undermine	"*I know people who their supervisor invites them for tea and cakes every month and really wants to be their friend…I couldn't stand that because I'd be like 'Is my*	• Female, young and junior academics bear the brunt of DR mental health and wellbeing	"*I suggested that* [this DR] *go to the counselling unit…They said that they wouldn't want to take away sessions from somebody who really*

	institution. • . Time spent with other DRs can cause distraction and enhance negative social comparisons and competitiveness. • Efforts to engage others socially can be draining. •	*information opportunities and messages, and hubs*" (A&H) "*…if I just did 12-hour days, 16- hour days, if I stopped sleeping, if I stopped eating…could I also have a Nature paper in my first year of my PhD?*" (S) "S1: …*not having a community…unless you build one.…it takes quite a lot of thinking about…constantly saying, "Let's go for drinks …do you want to come?"* S2: *…the people reaching out are often the same …that's really tiring*." (A&H)	supervisee mental health and wellbeing disclosures, and impact on DRs' willingness to work with other people. • Cultural differences may impact on supervisee comfort with social intimacy in supervision.	*work actually good or do you just not want to offend me?*'!" (S) "*I have such a good relationship…*[and] *respect* [my supervisors] *so much…I didn't want to involve them in how bad* [my wellbeing] *had got*." (SS)	issues. • DRs sense of social responsibility undermines support-seeking. • DRs can be unwilling to access campus-based support services.	*needed them*." (S)

Individual	• Doing a PhD without social support is damaging. • Working in isolation increases loneliness. • Lack of social network in and out of university might hinder detection of mental health and wellbeing problems. • DRs might	"S1: …*when you start…a requirement of a PhD should be* [to think if] *you are coming in with a support network?"* [otherwise] *you could really get into a point where there's no-one around you can really talk to.*" (S) "*…there weren't enough desks in this doctoral space…And me and the other researchers ended up going into a room, finding some empty desks and carrying a really heavy desk, it took three of us to carry one desk, up two flights of stairs, hoping that we wouldn't get caught…But I didn't want to*	• Lack of social intimacy in supervision can undermine supervisee confidence, and supervisor sensitivity and willingness to discuss DR mental health and wellbeing.	"*if* [the supervisor is] *like a really chill person, they're like "I'm…looking at the way you're talking to me,* [how] *your lab meetings are going, I think you're having a bit of a rough patch, do you want me to forward you to this resource or connect you with this person?" That's a very caring thing to do"* (S) "*…you spend ten minutes writing a well-worded email to your supervisor…And then you get a ten second reply back...that tells you "That's all rubbish."…I don't feel that*	• Lack of visible and available means of support in departments may limit disclosure. • Lack of informal social interactions with supervisors and other academics prohibits discussions about DR mental health and wellbeing.	"*…integration actually doesn't happen…there's a lot of people who feel completely disconnected…that makes you feel even worse off, you're by yourself, you're isolated*" (SS)

	take risks to try and build community.	*work alone"* (A&H)		*everyone really values those traits of being able to communicate the intent"* (S)		
Safety	• Lack of open sharing may prevent preparation for DR role and academic life and may undermine validation and normalisation. • Lack of transparency masks the importance of	"*...so many DRs are being trained for the university system. We need to know what the levels of stress and mental health* [are]" (SS) "*If people would just be honest about* [their failures]*, then I think that people would be less likely to be worried…you get in the cycle of being really anxious and feeling like you're useless…*" (S) "*…it would have been good to have some conversations…*[to]	• Supervisory practices are unchallenged by DRs, faculty, or university management. • New DRs cannot make informed choices about supervisor/s as there is no accessible	"*I quite like the idea of being able to rate your supervisor and then other PhDs could see that. Because …if they are running into a problem of 'Okay I have this PhD student, they said they don't want to accept, why? Oh, because I have one star on 'rate-my-supervisor' and it says that I cannot communicate'*" (S)	• Knowledge of sectoral issues can increase sense of connection to academia. • Safety of not challenging perceived institutional myths does not mean psychological safety.	"[A]*t high levels there's not very much vulnerability and transparency about how people actually approach their daily work lives and how they actually go about maintaining their wellbeing at the same time as achieving as a researcher."* (S) "[The recent strike action] *it is inextricable*

	failure in learning.	*acknowledge that there might be some really big life changes that happen during the PhD. The PhD might trigger them, it might be a catalyst for them…I spent quite a long time…literally Googling relationship breakdown during PhD fieldwork. Because I was desperate to find out like what has happened to other people and how they dealt with it"* (SS)	information about their practices.		• Universities engage in censorship which undermines academics' wellbeing.	*from mental health because we are talking about our futures…if you ask people to repress feelings in one sphere that bleeds into others.*" (A&H)
Authenticity	Openly discussing DR and PhD challenges and	"*It requires a lot of you putting yourself in quite a vulnerable position in order to say, "I don't feel like I can do*	• Supervisor sharing of typical DR struggles	"*…my first meeting with* [my supervisors] *was, "We have a history of making people cry." …That's not something I want*	• Lack of consideration on how to provide	"*…on my first day* [someone from the department] *…gave me this absolute tonne of*

	mental health problems can feel bleak and depressing, and can result in DRs' sense of the positive and transformative aspects, and sense of individuality and autonomy being undermined. Reputational risks associated with mental health disclosures.	*this.'*" (S) "*Whenever someone would talk about PhDs, it's always this really hard thing, you're always going to be depressed…the atmosphere in general, the environment is just really negative.*" (SS)	undermine supervisee autonomy and individuality. • Supervisor responses to mental health and wellbeing disclosures can risk supervisees feeling ashamed. • Reputational and employment consequences to challenging practices or changing	*to hear right?…*[D]*on't make me feel like this is something wrong either or that's something you've done in the past or because you're too harsh. If I cry, I cry, that's okay because that's how I'm expressing myself*' (SS) "*I said* [to my supervisors] *"I don't know if it's appropriate to tell you* [but I'm really upset that a family member is really unwell]*" and they said "Yes, I'm fine with it, some other supervisors it wouldn't be"…in my head that manifested as…it wasn't an*	information to DRs in a sensitive and timely fashion. • Knowledge of sectoral issues increase sense of futility regarding future of academia. • Individual authenticity does not necessarily result in systemic change.	*information on the PhD process, the entire four years, every stage of it…it was so over-whelming…I almost started crying…I think that, combined with a general slightly negative attitude amongst DRs at my school, it was just a lot to take in.*" (SS)

• Focusing on things lacking in the DR role can undermine sense of perspective.		supervisor.	*appropriate thing…maybe I'd gone over the top and just over-shared*" (A&H)

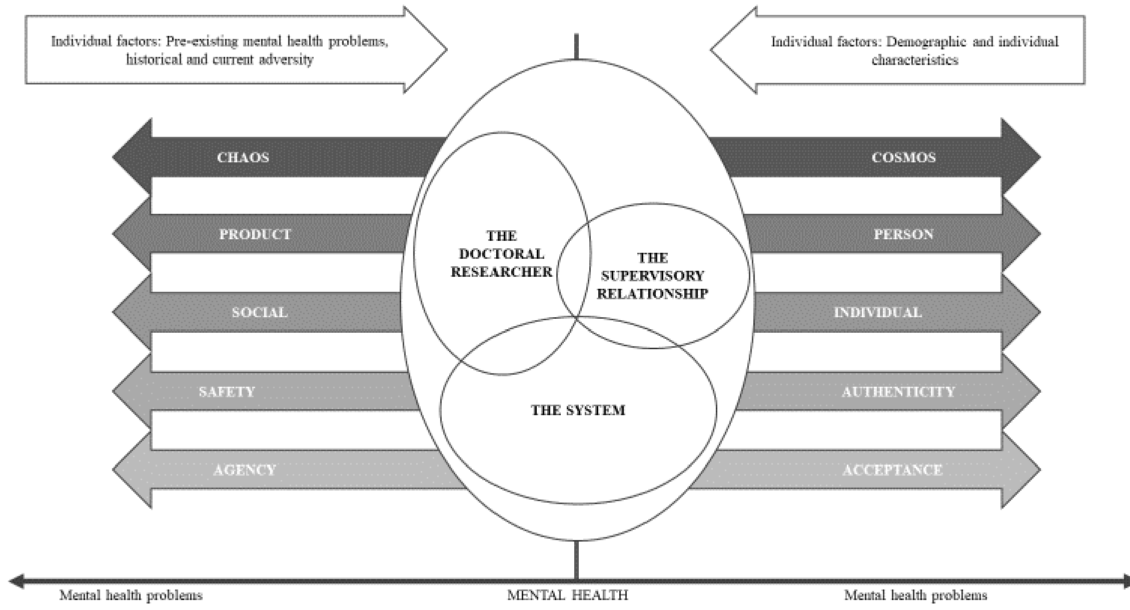

Figure 1: The tension-balance model of doctoral researcher mental health.