"There's only so much an individual can do": An ecological systems perspective on mental health and wellbeing in the early stages of doctoral research

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Abstract

Calls to address concerning evidence surrounding mental health and wellbeing in doctoral researchers have grown internationally in recent years. Adopting an ecological systems approach, this article explores doctoral researchers' perspectives on what influences mental health and wellbeing in early-stage doctoral research. Forty-seven doctoral researchers took part in focus groups exploring mental health and wellbeing in the first year of doctoral study. The framework generated through our thematic and connecting analyses emphasises the interdependency of the various layers of the environment surrounding early-stage doctoral researchers. In line with our theoretical perspective, we describe the influence of: individual factor; the microsystem; the mesosystem; the exosystem; and the macrosystem. Participants highlighted the impact of the broader working culture in academia on their mental health and wellbeing, which permeated other, more proximal layers within their environment. This article contributes knowledge that can aid the development of interventions seeking to support mental health and wellbeing in doctoral researchers. Furthermore, our findings suggest that without the adoption of a whole-systems approach, efforts to improve mental health and wellbeing in these researchers could be difficult.

Word Count: 8000

Introduction

Recently, concerns with mental health and wellbeing in doctoral students have become an increasingly visible issue in the higher education (HE) sector internationally. Substantial evidence has developed regarding mental health and wellbeing in doctoral students (Hazell et al. 2020; Jackman et al. 2021a), with many studies identifying serious concerns. Levecque et al. (2017), for example, found that based on symptoms reported, 51% of doctoral students in Belgium were at risk of experiencing psychological distress, with 32% considered at risk of experiencing a psychiatric disorder. Furthermore, a sample of graduate students (90% PhD students) in the USA were found to be six times more likely to experience depression and anxiety when compared to the general population (Evans et al. 2018).

To address these concerns, calls have been advanced for HE institutions to develop prevention and early intervention strategies and policies to promote mental health and wellbeing in doctoral researchers (Metcalfe et al. 2018). Such calls acknowledge that reactive approaches to supporting doctoral researchers are less likely to be effective. Preventative strategies could help protect against the onset of poor mental health and wellbeing, while robust early intervention strategies could aid with the identification of doctoral researchers needing support, and/or enable doctoral researchers to access this support promptly if concerns arise. The implementation of these strategies is paramount as poor mental health and wellbeing are contributing factors to doctoral student attrition (Maher et al. 2020), which some figures suggest could be as high as 30-50% (McAlpine and Norton 2006). As doctoral researchers represent the future of academic research and leadership, understanding why mental health and wellbeing are impacted in this population is important to inform the development of policies and/or practices that address the unique challenges they face.

From a public health perspective, health-promoting initiatives can be categorised as downstream or upstream. Downstream approaches to health promotion focus on individual-

71 level behaviour change, whereas upstream approaches focus on policy and social

72 determinants of health (Popay 2010). Published studies that have examined the effects of

73 interventions on mental health and wellbeing in doctoral students appear to have adopted

74 downstream approaches. Researchers have, for example, examined the effects of: strength-

75 based writing support groups (Russell-Pinson et al. 2019); mindfulness (Barry et al. 2019); a

76 positive psychology intervention (Marais et al. 2018); and a time-limited counselling

77 intervention (Wright 2006). However, mental health and wellbeing are not only influenced by

78 individual attributes but are also shaped by the multi-layered environments surrounding

79 individuals (World Health Organisation 2012). Therefore, interventions designed to promote

80 mental health and wellbeing in doctoral researchers should seek to tackle the many aspects of

81 the doctoral education environment that can be detrimental to mental health and wellbeing in

82 doctoral students (Mackie and Bates 2019). In turn, this highlights the need for studies on

83 doctoral researchers' mental health and wellbeing to move beyond fragmenting the doctoral

84 education environment, to draw on a more comprehensive, whole-systems approach, to

85 understand the complex interplay between different elements of the doctoral education

86 environment and doctoral researcher behaviours.

87 Consideration for the wider environment is important, as much of the doctoral

88 education literature appears to place responsibility for poor mental health and wellbeing *on*

89 doctoral researchers, thus individualising the issue, rather than considering how such trends

90 might be influenced by organisational culture across the HE sector (Deem 2020). Shifting to

91 a wider perspective is needed to account for radical cultural shifts in HE, where performance

92 management now dominates, as exemplified by the omnipresence of metrics (Sang et al.

93 2015). Within this neoliberalist landscape, the intensification of performativity in HE and the

94 emphasis placed on the achievement of 'excellence' within the academy have created heavier

95 workloads (Morrish 2019) and a long-hours culture (Sang et al. 2015). This working culture

96 has also permeated the doctoral education environment, with doctoral researchers citing

97 difficulties with maintaining a work-life balance and often feeling pressured to work longer

98 hours, issues that can, in turn, create fertile conditions for poor mental health and wellbeing

99 (Metcalfe et al. 2018).

100   Within this context, this article provides a novel contribution to the doctoral education

101 literature by adopting an ecological systems approach to understand mental health and

102 wellbeing in doctoral researchers. The next section presents the theoretical framework, which

103 is then followed by the results of an empirical study, and a detailed discussion.

104 ***Theoretical Framework***

105 Ecological systems theory (Bronfenbrenner 1979) proposes that individuals exist

106 concurrently within a variety of contexts and are shaped through a process of interactions

107 between themselves and these contexts. Bronfenbrenner (1979) proposed that individuals

108 interact with four layers in their environment - microsystem, mesosystem, exosystem, and

109 macrosystem – which impact on their general development. The micro-system (Level 1)

110 refers to the activities and interpersonal relationships experienced by an individual within

111 their immediate surroundings (e.g. peers). The meso-system (Level 2) constitutes the

112 interrelations between two or more settings in which the individual is participating (e.g.

113 academic contexts and the home environment). The exosystem (Level 3) describes links

114 between a context in which an individual does not have an active role and immediate contact

115 (e.g. HE institution). The macrosystem (Level 4) is the outermost layer and constitutes the

116 wider culture, including the attitudes, and prevailing norms that permeate the other systems.

117 Furthermore, these systems are influenced by the chronosystem (Level 5)*,* which consists of

118 transitions and life events that occur over time throughout the course of a person's life,

119 therefore providing opportunities to utilise it to understand specific educational stages.

Since its introduction, ecological systems theory has been used to understand university students' experiences (McLinden 2017) and applied to public mental health research (Eriksson et al. 2018). To date, however, no instances of its application specifically to mental health and wellbeing in doctoral researchers were found. From an ecological systems perspective, a person and their environmental systems are reciprocal and interdependent rather than independent. Furthermore, when approached from this perspective, mental health and wellbeing are positioned as properties of the entire system *and* an individual's behaviours, a point often overlooked within the doctoral education literature (Deem 2020). In response to calls for researchers to address the complex interplay of factors influencing mental health and wellbeing in doctoral students (Mackie and Bates 2019), we undertook an exploratory study that adopted an ecological systems approach to address this research lacuna. Specifically, we considered the influence of the chronosystem within ecological systems theory (Bronfenbrenner 1979) by focusing on the first year of doctoral research to address our key research question: *what factors influence mental health and wellbeing during the first year of doctoral study?*

Methodology

Research approach and positionality

This exploratory study adopted a qualitative research design. The dataset was part of a larger study on developing inductions to promote mental health and wellbeing of doctoral researchers, the findings of which are reported elsewhere (Jackman et al. 2021). To help understand how our researcher positionality shaped the research, we describe our backgrounds. PJ is a female, White-Irish, early career researcher, and doctoral supervisor, who became interested in the area following her doctoral study experience. RS is a female, White-British doctoral researcher, whose interest in the topic arose from her own experience of the challenges of returning to study as a mature student, balancing work, study and caring

145 responsibilities. JA-C is a White-British, female, 'late entry' academic, with over 30 years'

146 experience of researching and supervising doctoral students. LJ is a female, White-British

147 doctoral researcher, whose lived experience of doctoral study and balancing part-time work

148 led to their interest in the topic. While we were aware that our researcher and professional

149 backgrounds gave us valuable 'insider' knowledge on the doctoral education environment,

150 which aided the research process, we consistently challenged our own assumptions while

151 collecting, analysing, and interpreting the data.

152 *Participants*

153 After obtaining ethical approval from our university ethics committee, 47 participants from

154 24 institutions were recruited for the study via advertisements posted on social media and

155 circulated via emails at five UK institutions (Table 1). The eligibility criteria required

156 participants to be in the first two years of full-time doctoral research degrees or the first four

157 years of part-time doctoral research degrees. Seventeen participants reported a history of poor

158 mental health before commencing their PhD. Participants were given a £10 voucher as an

159 inconvenience allowance.

160   [INSERT TABLE 1]

161 *Data collection*

162 Twelve online focus groups were conducted in January-February 2021 by PJ and LJ (average

163 length = 94 minutes). All participants provided informed consent to take part in focus groups,

164 which were digitally recorded and transcribed verbatim. Prior to taking part in the focus

165 group, participants completed a brief online demographic questionnaire. The focus group

166 discussion topics[1] were open-ended and the conversations focused on understanding the

167 participants' experiences in terms of their: background to their PhD; perceptions of the

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[1] The discussion guide included a question exploring participants' views on content that should be included in inductions to support mental health and wellbeing in doctoral researchers, the findings of which are reported elsewhere (Jackman et al. 2021b).

168 transition to doctoral study ('Can you describe how you found the experience of transitioning

169 into doctoral study?'); and perceptions of factors impacting mental health and wellbeing in

170 doctoral researchers in the early stages of the doctorate ('What factors influence mental

171 health and psychological wellbeing in doctoral students in the early stages?'). Further probing

172 questions were employed to elaborate on points raised, although participants were also

173 reminded throughout that they were not required to answer any specific questions, or

174 contribute to any discussions, and could withdraw at any point.

175 *Data analysis*

176 Our analysis combined deductive and inductive approaches, whereby we considered our

177 existing knowledge of Bronfenbrenner's (1979) ecological systems approach in framing our

178 analysis, especially in the final stages. Data were analysed following guidelines for thematic

179 analysis (Braun and Clarke 2019), using a team approach led by PJ. After reading and re-

180 reading transcripts to enhance familiarisation, RS and LJ adopted an inductive approach to

181 generate initial codes, which represented participants' perceptions of protective and risk

182 factors for mental health and wellbeing in early-stage doctoral researchers. After critical

183 discussions between these three authors, PJ combined similar codes to form preliminary

184 higher-order themes, which were subsequently reviewed by RS and LJ. After reaching

185 general agreement on the higher-order themes, PJ adopted a deductive orientation to

186 categorise these higher-order themes into preliminary themes, drawing on Bronfenbrenner's

187 (1979) ecological systems theory as an analytical lens (Braun and Clarke 2021). These

188 preliminary themes were subsequently reviewed by RS and LJ. In reviewing and refining our

189 final themes and preparing our written report, we examined interrelations between the

190 different layers of the ecological systems through a connecting analysis (Maxwell 2012),

191 while also considering how the protective and risk factors could be reconciled. Throughout

192 the analysis process, we engaged in detailed discussions, including JA-C as a 'critical friend';

193 a colleague who had long experience of working with, and undertaking research on, doctoral

194 students (e.g. Allen-Collinson 2005). As Smith and McGannon (2018) identify, the role of

195 critical friends is not to achieve complete consensus amongst the research team members, but

196 rather to encourage reflexivity. Importantly, too, as these authors note, such dialogue with a

197 critical friend acknowledges that other plausible interpretations are possible and defensible.

198 As a research team, therefore, we sought to scrutinise and critically review our analytical

199 interpretations, and arrived at shared understandings with regard to data interpretations, and

200 our findings, which are portrayed below.

201 **Findings**

202 Consistent with the ecological systems approach (Bronfenbrenner 1979), participants

203 delineated a complex interplay between different systems surrounding their early-stage

204 doctoral journeys, with mental health and wellbeing embedded at the heart of these

205 interactions (Figure 1). In the following sections, we present themes organised according to

206 the different systems within Bronfenbrenner's (1979) ecological systems theory.

207   [FIGURE 1 HERE]

208 *Individual Factors and Mental Health and Wellbeing*

209 Individual-level characteristics consisted of aspects residing within the individual, many of

210 which were simultaneously influenced by other, outer systems. Problem-focused coping

211 strategies (e.g. planning) were reported as key to managing the demands of doctoral study

212 and protecting mental health and wellbeing, as exemplified through this discussion:

213   I set my to-do list at the start of the day and if something else comes up and I do it, I'll

214   retrospectively go back in and add it to my to-do list after I've done it, just so I can

215   tick it off. (Social sciences 9, female)

216   (Laughs) Yeah! (Medical sciences 10, female)

217   Yeah, it's that real, 'I need to see myself ticking stuff off and doing stuff'. (Social

218   sciences 9, female)

219   Yeah, I find it helpful to do the bullet diary where I have different sections. Let's say I

220   have the to-do list on one section, then when I read something or I find a good way of

221   expressing something, I write that down on another page, and I have everything in

222   order. Structuring it a bit has been also helpful in giving that feeling of

223   accomplishment. (Social sciences 6, male)

224 However, some struggled to enact problem-focused coping strategies without direction, and

225 felt they could have benefited from more support:

226   For me, what would've been really helpful was just to be really clear about the really

227   short-term expectations when you first start. My supervisors, they just want me to

228   settle in, but I really didn't know what I was supposed to be filling my time with.

229   (Medical sciences 3, female)

230 The importance of self-care was widely discussed. Common self-care strategies noted were

231 physical activity, hobbies, and rest periods, as several participants highlighted:

232   If I'm having a struggle and a bad day, it's thinking 'let's take a couple of hours away

233   from the screen, away from it all and stick a podcast in and go for a walk'. (STEM 2,

234   female)

235   They [institution staff] drum that into you at the start, 'make sure you keep doing your

236   hobbies'. That was something that kept coming up and kept coming up and I was like,

237   'I don't have that many hobbies,' at that point. I've probably taken up more since I've

238   been doing my PhD to cope. (Social sciences 22, female)

239 Dedicating time to self-care was, however, often difficult, with participants feeling time away

240 from their studies could compromise progress. Two participants explained:

241 There's quite a lot of pressure to do quite a lot and show your competence, but I think

242 that can be quite a strain on mental health, not being able to take a step away. (Social

243 sciences 7, female)

244 It's trying to find that balance between 'is that helpful for my mental wellbeing or

245 mental health?', because I'm making progress and that may make me feel better, but

246 I'm still not switching off. (Social sciences 17, female)

247 The desire to make progress was often connected to worries surrounding capabilities, with

248 feelings of self-deprecation described by many:

249 I know that I probably wouldn't feel as isolated if I didn't have anxieties and feelings

250 of imposter syndrome, because I wouldn't feel like I'm totally alone and not good

251 enough to do a PhD. (Medical sciences 1, female)

252 I've always got this feeling that I'm not good enough, that I don't deserve to be on

253 this course. (Social sciences 1, female)

254 While some individualised characteristics, such as perfectionism, were deemed unhelpful and

255 often amplified perceived pressure, others, such as emotional stability, were considered

256 protective. One researcher said, 'I don't feel that myself I've been like impacted or my

257 mental health has really changed in starting, but I'm always told I'm a very calm person that

258 doesn't get worked up about things' (Medical sciences 12, female). Feeling connected to

259 peers (microsystem) helped to combat isolation, but many viewed isolation as a phenomenon

260 that was particularly challenging, given the solitary nature of doctoral research, as one

261 remarked: 'With the undergraduate and Master's, you start with all these other people, there's

262 a big cohort of you and you're in the same boat, you've got the same deadlines, everything,

263 you're going to lectures. Whereas with the PhD it's *you* and *your* topic and you're the only

264 one working on it' (STEM 1, female). The financial support from universities (exosystem)

was, for many, insufficient. Even participants who received stipends felt adversely affected

by financial worries. Two participants commented:

> I have three children, house, mortgage, everything, was in a full-time PE position, and
> going from having that wage and then having to think about dropping that wage in
> half was a real struggle. (Social sciences 17, male)

> The second thing which is tough on your mental health is financially, because a PhD
> stipend is less than the minimum wage. That's why I have to work as well. (Medical
> sciences 8, female)

Finally, for some, managing pre-existing physical and/or mental health difficulties made the

already demanding nature of doctoral study even more difficult: 'Transitioning back in was

hard, especially having to manage the physical and the mental difficulties that I now have'

(Social sciences 1, female). Another participant explained that the transition to doctoral was

difficult for her mental health:

> It [transition] triggered a previous mental health condition that I'd recovered from
> when I was younger and I didn't really tell the university probably until like after a
> few months of me receiving treatment again, and as soon as I told the university, they
> were really, really supportive. My supervisors went above and beyond. (Social
> sciences 14, female).

Similar to the above extract, others discussed the benefits of supervisory support and

communication (microsystem): 'One thing I found that was really good…was something that

we worked on as a supervisory team, which was identifying signs that I can recognise and

signs that they can recognise if your mental health is starting to slip' (Medical sciences 1,

female). Based on our analysis, a variety of independent and interdependent individual

factors were identified as influencing the mental health and wellbeing of early-stage doctoral

289 researchers. This emphasises the importance of considering the whole system surrounding

290 doctoral researchers and the interrelatedness between these systems.

291 *Microsystem Impact on Mental Health and Wellbeing*

292 A salient pattern was the importance of support networks surrounding doctoral researchers: 'I

293 would definitely say social support; so, support from your colleagues, fellow PhD students,

294 friends, family, also supervisors, I think that's a huge factor which can positively influence

295 your experience over time' (STEM 5, female). Respectful, caring, and reassuring were

296 deemed the most desired supervisor characteristics. Supervisors who defied what doctoral

297 researchers perceived as a broader culture of long working hours in academia (macro-system)

298 helped to encourage self-care (individual) and management of the work-life intersection

299 (mesosystem):

300 At the start, I was almost doing reading, writing, or training, almost seven days a

301 week. There was no such thing as a weekend. I [was] going at it because I was really

302 excited to do it, until my supervisory told me, 'weekends, take them off, for the love

303 of God'. (Social sciences 4, male)

304 My supervisors are the ones who are saying 'make sure you take time off over

305 Christmas'. I think having people who are supporting you in keeping your work/life

306 balance is really important because there can be the pressure. (Social sciences 14,

307 female)

308 Conversely, some felt their supervisors, while still being supportive, were not always the best

309 role models for work-life balance:

310 I think that my environment, it's not a negative environment at all, it's very

311 supportive, but my main supervisor, I'm teaching her about work-life balance

312 (laughs). (Social sciences 12, female)

313 Oh, are you? (Facilitator)

She's working around the clock. She has grown-up kids, and she's not really

expecting me to do the same, but when she does it, I feel, maybe I should. I think it is

the guilt of not progressing. (Social sciences 12, female)

Feeling integrated within a department and supported by administrative staff were valued. Participants explained the importance of peer networks that provided social support and created a sense of belonging. Commonality of situation helped to 'normalise' experiences and generate empathy: 'The most helpful thing was the fact that you could walk into the office in the morning and you know that at least five other people in the room can totally empathise with what you're going through' (Social sciences 6, male). Occasionally, however, peer interactions could have a negative impact: 'Often you talk to a lot of students at the moment and all you ask is, 'How are you getting on?' and it's all, 'I'm so stressed. I'm doing this and that,' and it would stress you out a bit' (Social sciences 4, female). Beyond the academic community, support from family and friends was noted as helpful. These support-providers offered an outlet for emotional support:

Whenever I've been stressed, I just call a friend and talk about it. It's helpful to go out

somewhere and sit and talk with friends. (STEM 6, male)

It also helps to have someone at home, a partner, if you have a partner that is

supportive, and I think it also helps if they understand the academic world. (Social

sciences 11, male)

Echoing the view within this latter quotation, some felt family and friends without academic backgrounds might struggle to understand sufficiently to provide support:

I still have friends and family, but they aren't people who really understand what

you're doing. If it's not someone else who has done a PhD or doing a PhD, they find it

really hard to understand what you're talking about and the challenges you face.

(Medical sciences 8, female)

339 Many participants had moved locations, which presented some challenges as they began to

340 integrate into a new community: 'There was quite a large impact, because I left behind a

341 support network and a place that I was familiar with, and was suddenly in a new city, not

342 knowing people' (Medical sciences 1, female). Collectively, individuals and groups within

343 the micro-system surrounding doctoral researchers are key for supporting mental health and

344 wellbeing. However, it was clear that simply having a support network was not sufficient;

345 people within the micro-system could have a negative impact.

346 ***Mesosystem Impact on Mental Health and Wellbeing***

347 This theme captured perceptions of the interrelationships and intersections within and/or

348 between micro-systems. No participant referred to direct relationships between their personal

349 (e.g. family) and academic (e.g. supervisors) networks, but instead discussed the intersection

350 between these personal and academic realms. Participants alluded to the disintegration of

351 work-life boundaries, with the temptation to continue working (individual), exacerbated by

352 the long-hours work culture perceived by participants within academia (macrosystem). This

353 permeation of work into personal life was explained by one researcher, who contrasted it to

354 their previous, non-academic job:

355   In a work experience, you've got a work phone, you've got a work laptop. When you

356   finish your work, you turn them off and they're just switched off, whereas now I feel

357   like 24/7, I need to be reading, 24/7 I need to be replying to emails, and I almost don't

358   feel like there's a switch off. (STEM 3, female)

359 Unsurprisingly, participants with childcare responsibilities found it difficult to secure

360 sufficient time to work on their research. A part-time researcher discussed the challenges:

361   I expected to be like the others and dedicate every spare minute to this project, and I

362   beat myself up when I can't because I've still got to stop to do the school run. I've got

363   to stop to cook tea. I've got to do the washing, I'm running a house, and I've also got

two grown-up kids who have their own issues, and I can't see them because they're in

another town. It is a struggle. (Social sciences 1, female)

For some, however, not having children could increase the temptation to overwork. Indeed, difficulties with resisting the urge to work were amplified by intense competition between peers and other academics, as one participant articulated:

We're a very performance-oriented group and so there's a high expectation of you

performing or finishing up projects and preparing publications, getting things

published. The overall expectation is quite high and that can have quite a negative

influence on your mental wellbeing. (STEM 5, female)

Overall, our findings suggested that the domains of work and life intersected in ways that often negatively impacted on doctoral researchers.

Exosystem Impact on Mental Health and Wellbeing

This theme reflected the institutional context perceived to impact on mental health and wellbeing. There was widespread acknowledgement that institutional support was integral for supporting researchers facing the challenges of doctoral study. Individual coping resources alone (individual) would not always suffice, as one researcher portrayed:

For me, the biggest help comes from the top, from that organisational support. You

have that individual shield and they help you build that igloo around you, that

infrastructure that allows you to feel more shielded against inevitable stresses from

the environment that will be thrown your way. There's only so much an individual

can do to build up a resilience without support from the environment around them.

(Social sciences 13, male)

The types of institutional support for researchers were wide-ranging. Access to practical support mechanisms for research (e.g. ethics, software, library) and physical spaces conducive to productivity were paramount:

Basic stuff, like enough desk space, air conditioning, two screens. I think if those things aren't there, it's not going to be impossible, but it's much harder to get any work done. (Arts and humanities 1, male)

Some of the training sessions that have been put on by the university through the doctoral school have been helpful. It's helping me plug some of the gaps…Having that input has helped build my confidence. (Medical sciences 11, female)

Supervisors could also provide important support (micro-system), but the significant pressures placed on their time by other work-demands could make it difficult for some to give extensive support:

I know other PhD students and they see their supervisor once a month or have very little interaction with them because they're so busy with their own teaching hours and they have other PhD students. Then when they get to them, they say it's like, 'bang, bang, bang, bang, [this is] what you need to do' and that's it. You're gone from them again and you're on your own. I think that can be a very insecure and vulnerable place to be. (Social sciences 3, male)

Funding support for doctoral researchers led to concerns about financial stability for some (individual). Participants valued access to support services, such as a doctoral school, and mental health and wellbeing support. However, some considered this support had been inadequate:

There are a certain amount of resources in our university in terms of mental health and support, but I don't think that there's enough available. I think you might get one session with somebody, a counsellor, but I think if someone is really struggling, I don't think one session is really going to help. It's like putting a plaster over a gunshot wound. (Medical sciences 8, female)

413 Some participants who accessed student wellbeing services outlined that the bureaucratic

414 processes involved could, somewhat ironically, heighten stress:

415   All the bureaucratic things that are important to many students who have mental

416   health difficulties in maintaining positive mental health can be a very draining factor.

417   Trying to get all the documentation and getting in contact with student support, and all

418   of these bureaucratic hoops that you have to jump through, it can be quite a stressful

419   experience. (Medical sciences 1, female)

420 Finally, doctoral researchers needed clarity about university policies and regulations. While

421 acknowledging that deadlines were an inescapable element of academic life, they intensified

422 perceived pressure:

423   You've got those deadlines that you've got to meet, you have got work that you've got

424   to do, but my time is being spread between so many other things at the moment that

425   mentally, in a wellbeing sense, it is having quite a significant impact. (Medical

426   sciences 10, female)

427 Overall, it appeared that institutional structures could impact the mental health and wellbeing

428 of doctoral researchers, while also permeating other systems.

429 ***Macrosystem Impact on Mental Health and Wellbeing***

430 A culture of long working hours, and a perceived lack of consideration of mental health and

431 wellbeing, were widely discussed characteristics of academia recognised by participants,

432 even in the early stages of their doctoral degrees. Many felt that as university management

433 mainly rewards researchers for their outputs rather than their lifestyle, health and wellbeing

434 were deprioritised. As one researcher said, 'The research system is only oriented towards

435 your success rate, indexes, number of publications. Nobody gives you an award because

436 you're taking time for yourself or you're having a balanced lifestyle' (STEM 5, female). This

437 competitive environment appeared to perpetuate, and, in many instances, valorise, a culture

of long working hours, which, in turn, could lead to the belief that such behaviours were requisite or difficult to avoid:

> I've seen it online, almost a glamorisation of overworking, that I very much don't agree with. I don't know if glamorisation is the right word, but almost bragging about how little sleep you got and how late you stayed up…There are some almost unhealthy working habits that people have internalised as healthy, which I think can have a real detrimental impact on people's wellbeing. (Medical sciences 1, female)

> I feel like I always should be doing more, and I know that that's not necessarily a healthy thing, but it is there and I don't really know how to shake it, if I'm honest".
> (Medical sciences 12, female)

These attitudes towards working practices permeated through other systems; for example, they could be perpetuated by supervisor behaviours (micro-system), as one added: 'I think academics tend to be workaholics and if you go into a situation where your supervisor doesn't take any time off, works every weekend, it does put, perhaps, an indirect pressure on you' (Medical sciences 8, female). The doctoral researchers also described how they had come to expect that their PhD would induce stress and, therefore, be detrimental to their mental health and wellbeing: 'I think there's this common perception that doing a PhD is going to be stressful…I was constantly stressing, just because I was doing a PhD, not because there were any components that were stressing me out' (Medical sciences 3, female). These expectations and norms concerning poor mental health and wellbeing could be compounded by the researcher environment (micro-system), as this participant continued:

> I think the environment around you, like fellow researchers that have been through it, it would be really good if they were conscious of not asking questions like, 'Oh, are you stressed yet?' Like people kind of planting seeds in your head that it is going to

462   be a stressful process. I think that stigma needs to be taken away. (Medical sciences 3,

463   female)

464   Overall, participants' accounts suggested that current cultural attitudes and norms in the

465   macro-system surrounding doctoral researchers are unhelpful, thus emphasising the need for

466   systemic changes to promote mental health and wellbeing in doctoral researchers.

467   **Discussion**

468   By adopting an ecological systems approach (Bronfenbrenner 1979), currently under-utilised

469   in investigating mental health and wellbeing in doctoral researchers, this novel study

470   examined the complex interplay between doctoral researchers and their surrounding systems.

471   Our findings indicate that efforts to address calls for prevention and early intervention

472   strategies (Metcalfe et al. 2018) should consider upstream interventions that encourage

473   systematic changes, to better protect the mental health and wellbeing of doctoral researchers.

474   While the development of individual coping strategies has benefits, without changes in wider

475   systems, the implementation of downstream interventions shifts the responsibility for mental

476   health and wellbeing *on to* doctoral researchers individually, rather than acknowledging

477   and/or addressing the impact of the wider environmental context, including the academic

478   culture of the institution and wider HE sector.

479   Findings suggest widespread attitudes in academia can position doctoral research as a

480   crucible for poor mental health and wellbeing. Stress has been identified as widespread in

481   doctoral researchers (Hazell et al. 2020). Participants recounted expectations of stress in

482   anticipation of commencing doctoral research, with such expectations considered deleterious

483   by some. An occupational culture of long working hours appeared to generate expectations

484   for doctoral researchers to engage in behaviours, such as overworking or not taking sufficient

485   rest, that were not conducive to positive mental health and wellbeing. Long working hours

486   have been acknowledged as a salient issue in academia generally, often resulting from

487 pressures to subscribe to and embody behaviours of the 'ideal academic' (Sang et al. 2015).

488 These broader macrosystem attitudes often appeared to be perpetuated by different micro-

489 systems surrounding the doctoral researchers. Therefore, without systemic change in

490 macrosystem norms regarding working practices, such attitudes towards long working hours

491 may continue to permeate other, more proximal systems.

492 Support from supervisors has often been associated with positive indicators of mental

493 health and wellbeing in doctoral students (Byrom et al. 2020; Cornér et al. 2017). While our

494 findings concur with this literature, interestingly, our data also suggest that even when

495 supervisors were considered supportive, it was still possible for them unintentionally to

496 promote behaviours detrimental to the mental health and wellbeing of their supervisees.

497 Some participants explained that their supervisors – as well as other people in academia –

498 could intensify feelings of pressure to work beyond their contracted hours (e.g. weekend

499 working). The salience of role-modelling (intentional and unintentional) is therefore worthy

500 of consideration. Indeed, it appeared that when doctoral researchers viewed their supervisors

501 as role models, the latter could inadvertently undermine efforts to promote healthier working

502 behaviours (e.g. encouraging supervisees to take time off) by working longer hours. The

503 intensification and fragmentation of academic labour and increasing emphasis on productivity

504 (do Mar Pereira 2016) exacerbate this culture of over-work. Further research might

505 investigate role-modelling in doctoral researchers and how the working practices of

506 supervisors influence the behaviours of supervisees, alongside potential impacts on their

507 mental health and wellbeing.

508 The extent to which support mechanisms were resourced to support doctoral

509 researchers appeared to be important. Without adequate institutional-level support for

510 doctoral researchers, substantial difficulties were likely in the early doctoral stages. Based on

511 the types of support participants sought, it is important for institutions to ensure that

512 academic and non-academic support services are resourced, and also rendered visible to

513 doctoral researchers from the commencement of their studies. Findings in the current study

514 support previous work (Waight and Giordano 2018) in suggesting that even in the early stage

515 of their studies, doctoral students can face challenges when seeking non-academic support for

516 mental health concerns. The processes through which doctoral researchers can access support

517 should, therefore, be carefully considered, to minimise accessibility issues.

518   Our findings reinforce the importance of peer support and developing a sense of

519 belonging within the academic community (Schmidt and Umans 2014). Some small-scale

520 studies have demonstrated the potential utility of peer-support schemes (Buissink-Smith et al.

521 2013; Homer et al. 2021), but further, larger-scale studies affording longitudinal insights into

522 the effects of peer-support schemes are required. While peer connections were reported to

523 help reduce feelings of isolation and create feelings of connectedness and empathy, some

524 aspects of the peer micro-system, such as conversations reinforcing macrosystem attitudes

525 about stress, were not always conducive to promoting mental health and wellbeing. Again,

526 this underscores the need to instigate macrosystemic change to instigate positive changes

527 within research ecologies.

528 ***Implications for Policy and Practice***

529 Findings of the current study suggest a whole-systems approach to improving doctoral

530 researchers' mental health and wellbeing is needed, thus aligning with recent perspectives

531 across the HE sector (e.g. Universities UK 2017). Such an approach could usefully focus on

532 the development and implementation of upstream interventions that simultaneously target

533 various layers of the ecological system surrounding doctoral researchers, to maximise the

534 benefits of future interventions. Changing the culture surrounding working attitudes in

535 academia will require comprehensive and collaborative efforts across the HE sector. At

536 institutional level, academic leaders should ensure that support services and working

537 environments are in place and adequately resourced to support doctoral researchers.

538 Furthermore, institutions must ensure that supervisors have sufficient time allocated to

539 support students, by implementing a limit on numbers of supervisees if necessary (Taylor

540 2021), and offering training programmes to educate supervisors and other staff on ways to

541 protect doctoral researchers' mental health and wellbeing. Helping doctoral researchers to

542 feel a sense of belonging and forge positive connections with peers from the outset of their

543 studies should also be a priority.

544   Alongside these upstream approaches, interventions that encourage the development

545 of potentially protective individual behaviours could be considered. Doctoral researchers

546 could be educated on self-care practices, overcoming self-deprecation, and practical strategies

547 that strengthen their coping resources to manage the demands of doctoral study over time.

548 While changes in individual behaviours could be beneficial, without the implementation of

549 robust, upstream approaches that place a strong emphasis on the wider macrosystem,

550 exosystem, mesosystem, and microsystem levels, interventions focused on individual

551 behaviours will struggle to make the large-scale – and much needed – impact necessary to

552 improve mental health and wellbeing in doctoral researchers. Therefore, a cultural shift is

553 needed: away from interventions that target solely individual behaviours, toward addressing

554 the social and societal factors influencing mental (ill) health and wellbeing in doctoral

555 researchers. Accordingly, we suggest that future interventions should, in line with

556 recommendations for public mental health interventions (Eriksson et al. 2018), consider how

557 different ecological systems interact, and implement strategies that focus concurrently on

558 personal and environmental factors influencing mental health and wellbeing in doctoral

559 researchers.

560   Finally, at the individual-level, our findings provide further evidence of the

561 importance of self-care for doctoral researchers. Participants widely acknowledged the

562 benefits of self-care, but engagement in such behaviours was often limited by intense

563 workloads and worries about the repercussions of taking time-out for productivity. The lack

564 of engagement in self-care practices also appeared to be closely linked to the blurring (even

565 disintegration) of work-life boundaries, which made it difficult for participants to avoid a

566 situation in which their studies became all-consuming. These challenges to engaging in self-

567 care confront not only doctoral researchers, but should be acknowledged and addressed in the

568 HE sector more widely, especially at a time of increased academic pressures and workloads

569 (Morrish 2019).

Limitations and Future Directions

571 Several limitations should be noted when considering the findings. The sample consisted of

572 doctoral researchers in the early and middle stages of their studies, with the data collected

573 focusing on the early stage; issues more pertinent to later doctoral stages were not therefore

574 identified. Furthermore, the findings may not resonate with the experience of students on

575 other doctoral programmes (e.g. professional or practice-based doctorates). A key factor is

576 that data were collected during the Covid-19 pandemic. It is possible, therefore, that some

577 findings might have been affected by the specific circumstances prevailing, although many

578 findings resonate with past research (e.g. Hazell et al. 2020; Metcalfe et al. 2018; Morrish

579 2019). As with all research based on participant self-selection, it is possible the views of

580 participants are not representative (in a qualitative sense) of the wider population of doctoral

581 researchers. Indeed, although our findings may resonate with other doctoral researchers and

582 thus could achieve a degree of naturalistic generalisability (Smith 2018), we acknowledge

583 under-representation from doctoral researchers who did not identify as female, are enrolled as

584 international students, come from ethnic minorities, and are conducting research in STEM,

585 arts, or humanities subjects.

586   We suggest that based on our findings, certain avenues for future research could prove

587   fruitful. Findings reported offer potential hypotheses regarding correlates of mental health

588   and wellbeing that could be quantitatively tested. As detailed previously, the findings offer

589   ideas for interventions that could be tested in future. Although there is value in investigating

590   the effects of individual interventions targeting a single system-level, researchers are

591   encouraged to test the efficacy of larger-scale approaches that focus simultaneously on

592   multiple ecological systems to improve mental health and wellbeing in doctoral researchers,

593   and to give further consideration to the role of academic culture on the health and experiences

594   of this group. Given calls for prevention and early intervention strategies (Metcalfe et al.

595   2018), such interventions could be implemented when doctoral researchers commence their

596   degree, to help support them more effectively from the outset.

597   **Conclusions**

598   Employing Bronfenbrenner's (1979) ecological systems framework enabled us to provide

599   insights into the interlinkages between various environmental layers surrounding doctoral

600   researchers. In doing so, the findings highlight the potential limitations of downstream

601   interventions targeting mental health and wellbeing in this population. We have provided

602   several suggestions for policy and practice. Our data support recent work (Metcalfe et al.

603   2018; Morrish 2019) in suggesting a widespread change in attitudes towards working

604   practices and the apparent normalisation of stress in doctoral studies is needed as part of a

605   whole-systems approach. This is highlighted most ostensibly by the view amongst

606   participants that the academic community rewards individuals primarily for productivity and

607   outputs, while directing less attention to mental health and wellbeing. Developing a

608   sustainable approach to supporting the mental health and wellbeing of doctoral researchers

609   across the HE sector will necessitate fundamental cultural changes, moving beyond deficit

610   discourses of individual resilience, and considering the relationships both within and between

611   the ecological systems surrounding this academic community.

612

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729

730   **Table 1**

731   *Demographic characteristics of the sample*

Demographic characteristic	Grouping	*n*
Gender	Female	30
	Male	17
Enrolment status	*Part-time*	
	Year 1	9
	Year 2	6
	Full-time	
	Year 1	18
	Year 2	14
Domiciliary status	Domestic	42
	International	5
Discipline	Social sciences	22
	Medical sciences	13
	Science, technology, engineering, and mathematics (STEM)	7
	Arts and humanities	5
Age	20-29	31
	30-39	8
	40-65	8
Institution location	United Kingdom	37
	Ireland	3
	Mainland Europe	2
	Canada	2
	Australia	2
	China	1

732

Figure 1