Understanding suicidality and reasons for living amongst Doctoral Researchers: A thematic analysis of qualitative U-DOC survey data

Hazell, C.M., Berry, C, Niven, J. E and Mackenzie, J.

Understanding suicidality and reasons for living amongst Doctoral Researchers: A thematic analysis of qualitative U-DOC survey data.

Dr Cassie M Hazell

School of Social Sciences, University of Westminster, 115 New Cavendish Street, London, W1W 6UW, UK c.hazell@westminster.ac.uk.

Dr Clio Berry

Brighton and Sussex Medical School and School of Psychology, University of Sussex, Falmer, Brighton, BN1 9PH, UK c.berry@bsms.ac.uk

Professor Jeremy E Niven

School of Life Sciences, University of Sussex, Falmer, Brighton BN1 9QG, UK J.E.Niven@sussex.ac.uk.

Dr Jay-Marie Mackenzie

School of Social Sciences, University of Westminster, 115 New Cavendish Street, London, W1W 6UW, UK J.C.Mackenzie@westminster.ac.uk.

Corresponding Author:

Dr Cassie M Hazell.

Address: School of Social Sciences, University of Westminster, 115 New Cavendish Street, London, W1W 6UW, UK.

Email: c.hazell@westminster.ac.uk.

1 Abstract:

Evidence regarding the mental health of Doctoral Researchers (DRs) is very limited; that which exists suggests DRs are particularly vulnerable to experiencing mental health difficulties during their PhD. Despite the associated jeopardy, however, to our knowledge there are no data published nor in the grey literature, reporting on suicidality amongst DRs. Using an online survey, we invited UK DRs to complete the Suicide Behaviour Questionnaire – Revised and qualitatively describe their experience of suicidality and its association to their PhD studies. A total of 1,263 DRs provided these data, with 40% of these participants meeting Suicide Behaviour Questionnaire – Revised criteria for being at high risk of suicide. Within the qualitative data, we identified three higher-order themes: (1) lived experience of suicidality; (2) PhD: the good, the bad, the ugly; and (3) life outside the PhD. Our findings suggest that suicidality is a common, yet complex and nuanced, experience amongst doctoral researchers. Identifiable elements of the PhD and personal lives can increase or protect against suicidality. The risk and protective factors identified here require verification using quantitative methods, but still support the immediate need for universities to respond to the risk of suicidality amongst their DRs.

1.1 Keywords:

Suicide; PhD student; doctoral researcher; qualitative; thematic analysis.

2 Disclosure Statement:

The authors have no conflicts of interest.

3 Introduction:

In 2019, the Guardian declared that the UK is experiencing a 'student mental health crisis' (Shackle, 2019), due to the increasing prevalence of mental health problems amongst students (YouGov, 2016) and increasing numbers terminating their studies for mental health reasons (Higher Education Statistics Agency (HESA), 2018). Of even greater concern, are the troubling statistics related to student suicide. Data from the UK's National Union of Students (2013) revealed that 13% of students have had suicidal thoughts, with half of students experiencing such thoughts multiple times per week. Rates of student suicides have increased by 79% since 2007 (Thorley, 2017), with 95 student suicides recorded in a single year in the UK (ONS, 2018).

Yet nearly everything we know about student suicide is restricted to undergraduate and postgraduate taught students. A recent systematic review on doctoral researchers' (DRs) (also known as postgraduate research or PhD students) mental health found no published research concerning suicide (Hazell et al., 2020), nor are there any known DR-specific prevalence statistics available in the grey literature. Studies conducted in the USA suggest greater (Silverman et al., 1997) or comparable suicidality for postgraduate, compared to undergraduate, populations (Brownson et al., 2011; Drum et al., 2009). Yet these studies do not disaggregate postgraduate research from taught students. One UK record-linkage study suggested fewer deaths by suicide for postgraduate, compared to undergraduate, students (Gunnell et al., 2020), but again did not disaggregate taught and research students. Moreover, these data say nothing of suicidality more broadly. Suicidality encompasses both the predictive role of suicidal thoughts (including plans) and suicidal behaviours (including intended acts to end one's life) (Li et al., 2020). The experience of suicidal thoughts is extremely distressing and debilitating, irrespective of association with suicidal behaviour (Dodemaide & Crisp, 2013). Again research is limited, but suggests UK postgraduate research students experience greater suicidal thoughts than taught students (Ejim et al., 2021). The broader context is that generally, DRs experience high rates of mental health problems, in excess of other students (Hazell et al., 2020; Levecque et al., 2017). Characteristics of the PhD environment are implicated in this high prevalence, for example, high stress, poor support, low status, and job, financial and future insecurity (Berry et al., 2020; Hazell et al., 2020; Waight & Giordano, 2018). Wider evidence suggests that in occupations that are low status and high stress, such as health, caring, police and creative occupations, suicidality is more common (Kyron et al., 2021; Windsor-Shellard & Gunnell, 2019).

The Integrated Motivational-Volitional (IMV) model of suicide behaviour (O'Connor, 2011) provides a relevant theoretical framework to understand DR suicidality, proposing that entrapment, humiliation, thwarted belongingness, and poor social support provoke suicidal ideation (O'Connor, 2011). A systematic review confirmed significant associations between loneliness, thwarted belongingness and suicidality among university students (Li et al., 2020), and the high expectations and

low support characterising PhD study conceivably would give rise to feelings of entrapment and thwarted belonging too. In addition to the IMV, the possible selves' model (Markus & Nurius, 1986) suggests that future self-construals, i.e. who we want, expect and fear to be, influence current thinking and behaviour. In particular, adolescents who attempt suicide have especially negative current and expected future selves (Carlson, 2001). The uncertainty and personal importance (Hazell et al., 2020) of doctoral research would seem a fertile breeding ground for salient and impactful future self-construals.

The robust relationship between mental health problems and suicide (Borges et al., 2010; Simon et al., 2018) and the stressful, uncertain, and isolated nature of PhD study merit greater exploration of suicidality in this context. The present research study aims to address this crucial gap in knowledge of doctoral student mental health.

3.1 Aim:

This study used a qualitative approach to understand the nature of suicide risk amongst a sample of UK DRs (1), including how suicidality is experienced (2), and risk and protective factors (reasons for living) (3) in this population.

4 Method:

4.1 Design:

The present study utilised a qualitative cross-sectional survey design, using the 'Understanding the mental health of Doctoral Researchers (U-DOC)' national survey (2018-2019).

4.2 The U-DOC survey:

The U-DOC survey comprised multiple measures of mental health symptoms and correlates. In capturing suicidality, DRs first completed the Suicide Behaviour Questionnaire – Revised (SBQ-R) (Linehan & Nielsen, 1981). The SBQ-R has four items; lifetime ideation or attempts, past year frequency of ideation, expressed intent, and likelihood of future attempts (see Figure 1). SBQ-R is considered a psychometrically valid tool for distinguishing between people who have and have not attempted suicide (Batterham et al., 2015). Psychometric evaluation indicated that a score of ≥7 reflects a high level of suicide risk outside of psychiatric populations (Osman et al., 2001), with one study suggesting 8 was a more accurate risk threshold among Nigerian university students (Aloba et al., 2015). In the current sample, the SBQ-R had excellent internal consistency (α= 0.85). After completing the SBQ-R, DRs were provided with an unlimited free-text box and asked to describe how their PhD studies, or conditions thereof, affected their SBQ-R responses and vice versa.

4.3 Participants:

To be eligible to for U-DOC survey participation, respondents needed to be studying for a PhD at a UK university. For recruitment purposes, every Doctoral School in the UK (*N*=162) was asked to promote the survey to their students. The survey was also promoted via social media, Prolific Academic, and paid advertisements on Facebook, with snowball sampling encouraged in the debrief information provided to respondents.

4.4 Procedure:

At the start of the survey, DRs were presented with an information sheet, consent form and eligibility assessment. Participants were then asked to complete a range of mental health questionnaires, followed by free-text boxes for qualitative responses. Questions related to suicide were displayed toward the end of the survey. At the end of the survey, participants were provided with an opportunity to enter a prize draw for a computer tablet and a debrief page detailing relevant mental health support services.

4.5 Analysis:

4.5.1 Sample characteristics:

Descriptive characteristics were used to summarise the sample characteristics of participants who provided qualitative data; means and standard deviations for continuous variables, and frequencies and percentages for categorical variables.

4.5.2 Quantitative data:

To reflect suicidality, SBQ-R total scores are reported with the frequency and percentage of DRs who met high risk criteria (separately using ≥7 and ≥8 thresholds).

4.5.3 Qualitative data:

Qualitative data were analysed using an inductive Thematic Analysis approach (Braun & Clarke, 2006; Clarke & Braun, 2013) guided by the study aims. The analysis followed the six steps of Thematic Analysis: (1) familiarisation with the data; (2) initial coding; (3) identifying themes; (4) reviewing themes; (5) labelling themes; and (6) report writing. The coding was completed using NVivo 12.

4.5.3.1 Credibility and reflexivity:

The first author led the analysis, with contributions from all authors, and revisions by the last author. At each analytic stage, the codes and/or themes were reviewed by co-authors against the raw data. All authors agreed the final thematic structure. Themes and sub-themes are supported with verbatim quotes.

The epistemic stance was critical realist. We sought to closely engage with respondents' short personal narratives, and to identify demi-regularities between participants, considering the social strata and events that may cause (un)shared experiences. As a research team, we reflect simultaneous insider and outsider perspectives. We have undertaken doctoral study and supervised and supported doctoral

students, yet as we all completed PhDs and became academics, our experiences are distinct to those currently studying and for whom PhD completion is less certain. Additionally, we have personal experiences of mental health problems and/or suicidality, and professional experiences of suicide research and psychotherapeutic practice. Our range of experiences and perspectives facilitated the consideration of the complex nature of suicidality, yet our collective identity as White British means suicidality is considered more an individual intra-psychic experience, *versus* other cultures which use more a collective lens (Morris & Crooks, 2015). This position is reinforced by our individual approach to data collection. Although we are interested in social aspects of mental health and were informed by interpersonal suicide theory, researchers from alternative cultural backgrounds may have identified more socio-ecological manifestations of suicidality and its influences.

4.6 Ethics:

All participants provided informed consent for participation. Participants completed the survey anonymously and are represented here using random, unique letter-number strings. The U-DOC survey received ethical approval from the University of Sussex Sciences and Technology Cross-Schools Research Ethics Committee (reference ER/CH283/9, approved 19/12/2017).

5 Results:

5.1 Sample characteristics:

In the U-DOC survey, 3352 DRs provided consent and questionnaire responses, with 1,263 (41.64%) respondents providing qualitative suicidality data. Our sample was largely female White UK citizens. Participants were mostly studying for their PhD full-time with full funding (Table 1).

[Insert Table 1]

5.2 Quantitative data:

From a maximum total of 18, the average SBQ-R score (Osman et al., 2001) was 6.47 (*SD* = 3.72). Using the threshold of ≥7, 754 (59.70%) participants were found to be at no immediate risk of suicide compared with 508 (40.30%) participants who were found to be at high risk. Using the ≥8 threshold, 843 (66.80%) participants were found to be at no immediate risk of suicide and 419 (33.20%) at high risk. This exceeds that for the total survey sample, of whom 35.12% (973) scored high risk at ≥7 and 21.62% (775) ≥8, meaning the qualitative sample are more affected by suicidality. The majority of respondents score zero, but a significant minority score at the extreme end for individual item responses (Figure 1). Of particular concern is that 36.74% of respondents did not select ‘Never’ or ‘No chance at all’ of making a future suicide attempt, and 7.13% indicated that a future attempt is at least ‘Likely’.

[Insert Figure 1]

Figure 1. Qualitative subsample responses to Suicide Behaviour Questionnaire – Revised (SBQ-R) (Linehan & Nielsen, 1981) items.

5.3 Qualitative data:

We identified three higher order themes, each with 3-4 sub-themes (Table 2) with illustrative quotes. Theme 1 is more descriptive, exploring DRs' lived experience of suicidality. Themes 2 and 3 are more analytical and illustrate suicidality risk and protective factors.

[Insert Table 2]

5.3.1 Lived experience of suicidality:

The lived experience of suicidality appeared distinguishable as personal experiences versus vicarious experiences. Personal experiences ranged from fleeting thoughts to a more salient preoccupation or active suicidal behaviours. DRs identified that suicidal ideation could serve an adaptive function.

5.3.1.1 Personal experience of suicidality as passive versus active

DRs reported variable experiences of suicidality, ranging from more 'active' to more 'passive'. Active attempts to end their life in the past were identified, as were ongoing or episodic suicidal behaviours:

> pyh: 'I have had 7 suicide attempts over the past 9 years, including 4 during my PhD'.
>
> mph: '…failure and a loss of opportunities can send me into a spiral of self-harm and suicidal attempts'.

Largely, however, DRs' reported experience of suicidality comprised more 'passive' thoughts. These thoughts could nonetheless be very frequent, salient and distressing, and give rise to a sense of being at risk:

> ugq: 'Thoughts of suicide drift uncontrollably around my mind every day and often I genuinely want to die'.
>
> 5Ji: 'I think about suicide several times every day. I commute to the university on the train and standing on the edge of the platform is often very dangerous time'.

Alternatively, there were descriptions of suicidal thoughts that were more fleeting and fluctuating; 'I had flashing thoughts [of suicide], but that's more me noticing the thought, rather than actually considering it' (2iW). Fleeting and fluctuating suicidal thoughts were described as coinciding with times of marked stress or low mood:

Z7Z: ‘When the PhD workload has been heavy, and I've felt that I've not been able to meet it because of family commitments, and so have felt out of control of my own destiny. That's when I've occasionally had the fleeting thoughts [of suicide]’.

Pi1: ‘In the darker times of depression you do consider it [suicide], but I have never taken it seriously and put it down to how I'm feeling at this moment and that things will get better’.

Other DRs did not identify ‘passive’ suicidal thoughts *per se*, but rather expressed a more removed desire to be ‘gone’, desiring that circumstances would end their current existence:

0uE: ‘I don't necessarily think about suicide, but more wishing I wouldn't exist’.

81z: ‘I don’t get thoughts of actively taking my own life, but I often get the thoughts of just dying in an accident and just ceasing to exist and disappearing’.

ZZD: ‘I have no desire to commit suicide and don't have suicidal thoughts per se, I just sometimes go to sleep thinking that it would be easier if I didn't wake up in the morning’.

5.3.1.2 Suicidality as helpful to me:

DRs reflected that suicidal thoughts could serve a positive or adaptive function. Suicidal thoughts could be comforting, a way of coping with distress:

eTV: ‘I think I use suicidal ideation to cope with depression sometimes’.

kqa: ‘…suicide is a comforting thought for when I am feeling anxious or like a failure. I often plan my suicide in my mind so that I can feel I have a way out’.

Alternatively, suicidal thoughts can be used as an indicator that DRs need to make changes in order to improve their wellbeing:

fwi: ‘For me, suicidal thoughts are [a] wake-up call to get back into a situation that lifts me up and lightens me’.

5.3.1.3 Suicide as harmful to others:

Some DRs exhibited critical or dismissive attitudes towards suicide, for example, as being ‘stupid’ (mJ9), a ‘waste’ (Bzr), and ‘a terribly selfish act’ (blG). Examples were additionally provided of knowing someone who had attempted or died by suicide and how devastating this can be for people left behind; ‘I have know[n] three people who committed suicide and in all cases it was terrible for friends and family’ (dMt).

Witnessing the impact of suicide on others could act to dissuade DRs’ from attempting suicide:

dNZ: ‘My mum tried two suicide attempts when I was 17-years-old and when I was 39-years-old. It was a terrible time for my family. The impact her mental illness had and her suicide attempts means I would never do that to my family’.

k18: ‘I have also worked with students who have committed suicide and have witnessed the pain it causes, and I wouldn't want that for anyone around me’.

5.3.1.4 Universities ill-equipped to support students with suicidality:

Some examples were provided of experiences of accessing helpful support for suicidality, including within the DR’s academic institutions: ‘I used my university's counselling service, which helped somewhat’ (jkq). However, there was evident reticence to discuss suicidal thoughts within universities:

uB3: ‘The knowledge that nothing is confidential in my institution (I have experience of this) has prevented me from seeking help in my institution’.

Universities appeared to be perceived as ill-equipped for managing DR suicidality:

G6g: ‘I've seen so many other students struggle with this [suicide] and not be able to access support or counselling through the university and recent suicides have been swept under the carpet by management who seem incapable or unwilling to talk about or learn from these’.

DRs reported feeling that their university and/or their supervisor(s) was not doing enough to support or prevent suicide, and even where support was provided, it was not fit for purpose:

L69: ‘I sense my supervisors (who do not have experience [of suicide]) occasionally are ‘freaked out’ by it. I have taken steps to ensure support for myself as and when needed, but the university is not prepared, in reference to all students, not just myself’.

5.3.2 PhD: the good, the bad, the ugly:

Different facets of the PhD were seen as increasing suicidality, whereas others were protective against experiencing suicidality or related distress.

5.3.2.1 PhD gives purpose:

The PhD could itself represent a reason for living. This was predicated on the PhD as having or conferring a profound meaning or greater purpose in life, and/or the value of the PhD research to society. There was an understanding that dying by suicide would bring an end to PhD research and therefore deprive people of its potential benefits:

jid: ‘I think my PhD has given me a purpose. I am aware of the societal impacts of my research and realise that I need to be here to enforce them’.

bz3: ‘I don't think that this [suicide] would be a good idea [because] I was doing important research as part of my PhD. It'd [suicide would] make more sense if I wasn't useful to society’.

5.3.2.2 The nature of the beast:

DRs discussed how they felt that the high pressure nature of the PhD contributed to or caused suicidal thoughts:

AvT: ‘The work that involves PhD studies sometimes frustrate me and makes me want to die’ (AyT).

KCf: ‘Unfortunately suicidal ideation is a symptom I am very familiar with. My PhD crushes me sometimes and sucks all the happiness I had out of me’.

Academia itself was described as a bleak environment synonymous with poor mental health and suicidality:

ARd: ‘I do wonder if that lingering desire for death, but not suicide, is tied to the kinda depressing reality of PhD and academic life…it seems that unhappiness is built into academia’.

Financial pressure and isolation were considered to be risk factors for suicidality:

wJ5: ‘It is the loneliness that the PhD studies create to me…that nobody cares about me or is interested in me, that I feel useless and also not good enough for what I am doing that make me think of suicide’.

Suicidality was seen to be greater when there was an evident nexus of stressors:

RGG: ‘It is rather the circumstances of doing a PhD that arouse suicidal thoughts, the situation of isolation, lack of social interaction, financial difficulties, exclusion from many activities for lack of funds’.

Another manifestation of influences on suicidality specific to PhD study was as a reaction to feeling criticised or belittled by others, most notably the supervisor:

gt2: ‘I have never felt suicidal before starting my PhD degree…I think the main reason for feeling suicidal and that you want to give up is the fact that you’re doing your best to prove you are very smart and capable and you end up being put down and criticised very harshly. Nowadays Academia is a horrible place to be for people who are a bit different and supervisors make sure these different people are reminded on their incapacity on every occasion. I truly believe that a PhD degree can kill you’.

Suicide was then an imagined act to punish these critical individuals and/or encourage behaviour change. This imagination of suicide illustrates DRs’ profound sense of helplessness experienced by

DRs, and the perception of academia as harsh and immovable, requiring such extreme acts to provoke any possibility of change:

vNN: ‘Sometimes I imagine committing suicide to 'punish' my supervisor and the postdoc who have made my life miserable - in the hope that it would teach them a lesson and made them change their behaviour in future’.

5.3.2.3 Suicide instead of failure:

The PhD could be all-consuming to the extent that the PhD and their personal identity could not be separated. Because of this central role, the idea of failing to complete the PhD was met with extreme fear and dying by suicide could be seen as preferable:

MpH: ‘I thought if I killed myself nobody would ever find out if I would fail my PhD or not. If I wasn’t having issues with supervisors, this thought would have not occurred to me’.

In this scenario, suicide was positioned as an alternative to anticipated shame for DRs themselves and those around them; ‘the best way out to avoid the embarrassment of having failed to get a PhD’ (n3h). Alternatively, suicidality was seen to be a reaction to the sense of pointlessness and purposelessness DRs anticipated on non-completion:

QIL: ‘I feel like if I can't succeed academically then my life is fundamentally worthless. Given that I often feel hopeless and like this is an impossibility and I will never be good enough, this leads inevitably to thoughts of suicide and suicidal urges’.

Moreover, there was a sense of being under social contract with the supervisor to perform well in the PhD, and perceived failure to meet these standards could precipitate suicidal ideation. The use of the word ‘moral’ in the following extract indicates the notion of suicide as a way of responding if one transgresses this contract:

n5f: ‘I often have suicidal ideation…I had no idea what was happening to me, or even that something was wrong until I got an email from my then-supervisor asking why I hadn't submitted a piece of work, and I immediately concluded that the only morally acceptable response to this situation was to kill myself’.

5.3.3 Life outside the PhD:

Life outside the PhD could be a source of positivity or could be a driver for suicidality.

5.3.3.1 There is more to life than my PhD:

Albeit often all-consuming, there was evidence that DRs could de-centralise their PhD within their broader life context:

RbP: ‘Life is more than a PhD success. That is my stance. There are many successful people without a PhD. PhD is just one of the many ways to excel. And not all PhD holders are successful’.

zCV: ‘…life is way wider than your PhD project, and I know it, and what most importantly, I truly believe and adhere to that. Even if I will not succeed in science, I have other ideas what to do’.

Some DRs emphasised that PhD completion or performance was less important than their wellbeing, and if the PhD posed a threat to health, for example invoking suicidality, quitting would be the preferable solution:

ZKA: ‘My PhD might be bad sometimes, but I would quit and go do something else. I would never want to kill myself over it, it's not that important in the scale of things’.

lVM: ‘I am aware that my wellbeing is so much more important that achieving a PhD and if I was to start feeling [suicidal] as a result of my PhD, I would most likely quit my PhD to focus on my mental health’.

5.3.3.2 Belonging as a reason for living:

An explicit protective factor against suicidality was belonging, with friends and family as the most mentioned explicit source:

EET: ‘I have very good and honest friends, a fantastic partner and a loving family, so I would never commit suicide’.

8K7: ‘I am always aware that I have a loving family and that even if these things didn't work out I would have support and somewhere to go. If this were not the case I may have had a different outlook (possibly reverted to more suicidal thoughts)’.

Religion or spiritual beliefs, i.e. that believing in a higher power or specific religious teachings, conferred protection from suicidality through providing a sense of one’s life belonging to God:

A6V: ‘According to the bible, I did not give life to myself so I cannot take my own life.’

XQB: ‘I will not commit suicide because I could never do that to my parents, and because I believe life is a gift from God and I have no right to end it.’

5.3.3.3 But life can be hard:

Nonetheless, life outside the PhD could contribute to suicidality, for example, through experiences of trauma or occupational stress:

Nol: ‘My thoughts on suicide stem from an abusive childhood and have no correlation to academia or my current PhD studies’.

Qzt: ‘[I was suicidal] in [the] past due to mental health whilst working. Never since starting studies’.

Even where suicidality was not necessarily stated to be a historical issue, DRs discussed factors other than their PhD that triggered or increased the risk of suicidality:

Evv: ‘My problems [suicidality] are more to do with a failed relationship’.

rEl: ‘My thoughts about suicide were related to an extreme set of events in my personal life which led to very very low self-esteem’.

6 Discussion:

We conducted the first known survey of DR suicidality. Our quantitative survey results show that 20-35% of DRs were considered to be at risk of suicide, according to the clinically-verified Suicide Behaviour Questionnaire – Revised (Linehan & Nielsen, 1981). The qualitative findings illustrate the complexity of suicidality; that it can be experienced behaviourally, vicariously, or as thoughts that may be passive or active, chronic or fleeting, with individual and nuanced risk and protective factors.

6.1 The PhD and suicidality:

Previous studies have established the high prevalence of mental health difficulties amongst DRs (Hazell et al., 2021; Levecque et al., 2017), with specific aspects of the PhD, such as the supervisory relationship, isolation, and boundless working hours, implicated as risk factors (Berry et al., 2020). The findings of the present study evidence that this high prevalence of poor mental health extends to suicidality, and suggests that the PhD can trigger this experience. The specific elements of the PhD process identified as problematic mirror those for mental health problems more generally, with isolation in particular seeming impactful. Alternatively, a PhD can function as a means of experiencing a felt sense of meaning in life (Berry et al., 2020), which protects against the development of mental health problems and suicidality (Henry et al., 2014). Evidencing a positive influence of the PhD on suicidality can help to challenge the dominant narrative that experiencing poor mental health during your PhD is ‘the norm’ (Berry et al., 2020), and identifies enhancing the sense of meaning as a specific target to support positive DR mental health.

6.2 Life outside the PhD and suicidality:

Life outside the PhD could be protective against or a risk factor of suicidality. This is in line with wider research findings that life experiences impact on suicidality, including a personal or family history of mental health problems (Hawton et al., 2013), trauma (Beghi et al., 2013), and interpersonal and

occupational challenges(Hall et al., 1999). In the same way that academics can access support for non-work issues via with their human resources department (although how much they do access this support is unclear), universities need to be mindful of difficulties that DRs may experience outside of their studies and provide access to the appropriate support. Moreover, poor work-life balance is pervasive across academia (Kinman & Jones, 2008), especially amongst those with more precarious positions (Bell et al., 2012). Better work-life balance would improve DR mental health and wellbeing (Berry et al., 2021), as well as decreasing intent to leave academia (Lindfelt et al., 2018).

6.3 The Integrated Motivational-Volitional (IMV) model of suicidal behaviour:

Our findings support several elements of the Integrated Motivational-Volitional (IMV) model (O'Connor, 2011). In line with the model which states that the combination of humiliation and entrapment leads to situations in which the person perceives they have failed and see no means of escape except taking their own life (O'Connor & Kirtley, 2018), DRs here reported that suicide was the only way to escape the perceived impending failure of PhD non-completion. Moreover, lacking social support can create a feeling there is no one who would miss them if they were not here (O'Connor & Kirtley, 2018). Presently, DRs acknowledged that one of the key aspects of the PhD process that increased their suicidality was the isolated nature of their studies and social relationships an important reason for living. Within the IMV model, a key factor that predicts the transition from suicidal ideation to behaviour is the ability and willingness to enact the intentions (O'Connor, 2011). Some DRs discussed vicarious exposure to suicide, positive imagery related to death, and a history of suicide attempts, all of which can increase the risk of acting on suicidal thoughts (O'Connor & Kirtley, 2018). Although support should be accessible to all, identifying and supporting DRs who have suicidal ideation in addition to risk factors for enaction should be prioritised.

6.4 Possible selves' model:

Complementary to the IMV model, our findings could be understood in relation to the possible selves' model (Markus & Nurius, 1986), in which the degree of discrepancy between future selves determines the individual's psychological wellbeing (Markus & Nurius, 1986). Current respondents largely expressed a hoped-for self as a PhD graduate and future academic, which was threatened by the fear or expectation of academic failure. Suicide therefore appeared a potential means of managing the distress associated with this discrepancy, whilst DRs who felt able to prioritise their own wellbeing above PhD completion were those appeared more able to form alternative positive non-academic future selves.

6.5 Strengths and limitations:

The online survey method used in this study facilitated collecting a great breadth of data from a large number of DRs therein increasing the generalisability of findings. However, we were unable to probe respondents for clarification or further detail. Therefore, any omission in participants' responses do not

necessarily represent disagreement or non-relevance of the subject. The collection of qualitative data enhanced our understanding of the complexity behind participant scores on the SBQ-R. Moreover, the experience of suicidal thoughts as 'adaptive' in the current study presents the possibility that a 'high risk' SBQ-R score may not in itself confer risk of acting on suicidal ideation. Nevertheless, the item-level analysis clearly suggests a significant minority of students are at risk of future suicide attempts.

Another limitation relates to the qualitative survey question. We asked DRs specifically how their PhD studies or the conditions of their studies affected their responses on the SBQ-R; it is perhaps unsurprising then that we identified themes around the effect of the PhD on suicidal thoughts. Had DRs been asked more generally about suicidality and the associated risk and protective factors, there may been fewer mentions of PhD studies. However, it is important to note that despite being asked about their PhD, DRs still made mention of non-PhD factors which suggests that the question was not necessarily leading.

6.6 Research implications:

This study establishes that there is a high prevalence of suicidality amongst DRs and identifies a number of associated risk and protective factors. The next step in this programme of research is to verify the relationship between these risk and protective factors and suicide risk using quantitative methods. Of particular interest would be the identification of mediators or moderators of suicidality, and mental health problems more broadly. Once a robust evidence-base of risk and protective factors associated with suicidality amongst DRs, the vital next step is to establish initiatives and interventions to reduce this. For such interventions to be successful, co-production with DRs, involving their perspectives and experiences at every stage, is essential (Pinfold et al., 2015).

6.7 Implications for practice:

The key practice implication from this study is the need for universities to reflect on the influence of academic cultures and structures on DR suicidality. The university-related risk factors associated with suicidality found here occurred at multiple levels and therefore, suicide prevention must take a whole-university approach; including at the levels of policy (i.e. a university policy of suicide prevention and management applicable to DRs), the administration (i.e. procedures for how all universities manage and report deaths from suicide), the faculty (i.e. training for supervisors and professional services staff to recognise and talk to DRs about suicide, and more generally about developing positive working relationships with DRs and sensitively offering constructive criticism), and DRs (i.e. ways for DRs to offer support or make referrals where they are concerned about peers' mental health). Existing interventions that reduce student suicide and change institutional practice focus on training staff 'gatekeepers' to better identify and respond to student suicidality (Wolitzky-Taylor et al., 2020), yet have been predominantly designed for undergraduate students and must be evaluated and adapted in consultation with DRs. Novel interventions worth exploring include those that increase hopefulness, as

hope protects against suicidality but may be reduced by the perceptibly harsh academic environment and asymmetric nature of the supervisory relationship (Berry et al., 2020).

A secondary practice implication concerns the need for a paradigm shift in academia. Clearly, life, activities and relationships outside of academia act as 'reasons for living', conferring significant protection against suicidal behaviours (Li et al., 2020). However, the ability to nourish life domains outside of academic work and study is limited by poor work-life balance, and is present amongst members of faculty (Kinman & Jones, 2008) and DRs alike (Berry et al., 2020, 2021). Work-life balance practices appear most heavily guided by perceptions of the workplace culture and policy alone is insufficient to prompt a change in the culture (Cannizzo et al., 2019), therefore senior staff must model and teach healthy working behaviours, for example, not answering emails outside of personal working hours and taking full holiday entitlement.

6.8 Conclusion:

In conclusion, a significant proportion of DRs are considered at high risk of suicide. The way in which DRs experience suicidality is complex and varied. We found evidence of suicidal behaviours and thoughts, both chronic and fleeting, as well as vicarious experiences of suicide. DRs reported that their PhD and their life outside of their studies could be a risk factor for or protective against suicidality. There is an urgent need for universities to acknowledge the presence of suicide risk amongst DRs, and work with researchers and DRs themselves to develop initiatives to reduce this risk.

7 Acknowledgements:

The authors wish to thank the Doctoral Researchers who participated in the present study, and the universities who helped to promote the U-DOC project. This research is funded by an Office for Students and Research England (previously HEFCE) Catalyst Award.

8 References:

Aloba, O., Akinsulore, A., Mapayi, B., Oloniniyi, I., Mosaku, K., Alimi, T., & Esan, O. (2015). The Yoruba version of the Beck Hopelessness Scale: psychometric characteristics and correlates of hopelessness in a sample of Nigerian psychiatric outpatients. *COMPREHENSIVE PSYCHIATRY*, *56*, 258–271. https://doi.org/10.1016/j.comppsych.2014.09.024

Batterham, P. J., Ftanou, M., Pirkis, J., Brewer, J. L., Mackinnon, A. J., Beautrais, A., Kate Fairweather-Schmidt, A., & Christensen, H. (2015). A systematic review and evaluation of measures for suicidal ideation and behaviors in population-based research. *Psychological Assessment*, *27*(2), 501–512. https://doi.org/10.1037/pas0000053

Beghi, M., Rosenbaum, J. F., Cerri, C., & Cornaggia, C. M. (2013). Risk factors for fatal and nonfatal repetition of suicide attempts: A literature review. *Neuropsychiatric Disease and Treatment*, *9*, 1725–1736. https://doi.org/10.2147/NDT.S40213

Bell, A. S., Rajendran, D., & Theiler, S. (2012). Job stress, wellbeing, work-life balance and work-life conflict among Australian academics. *E-Journal of Applied Psychology*, *8*(1), 25–37. https://doi.org/10.7790/ejap.v8i1.320

Berry, C., Niven, Jeremy E Chapman, L., Valeix, S., Roberts, P., & Hazell, C. M. (2021). A mixed mixed-methods investigation of mental health stigma, absenteeism and presenteeism among UK postgraduate researchers. Studies in Graduate and Postdoctoral Education. *Studies in Graduate and Postdoctoral Education*, *12*(1).

Berry, C., Valeix, S., Niven, J. E., Chapman, L., Roberts, P. E., & Hazell, C. M. (2020). Hanging in the balance: Conceptualising doctoral researcher mental health as a dynamic balance across key tensions characterising the PhD experience. *International Journal of Educational Research*, *102*, 101575. https://doi.org/10.1016/j.ijer.2020.101575

Borges, G., Nock, M. K., Abad, J. M. H., Sampson, N. A., Alonso, J., Helena, L., Angermeyer, M. C., Beautrais, A., Sagar, R., Tomov, T., Uda, H., & Williams, D. R. (2010). Twelve month prevalence of and risk factors for suicide attempts in the WHO World Mental Health Surveys. *Journal of Clinical Psychiatry*, *71*(12), 1617–1628. https://doi.org/10.4088/JCP.08m04967blu.Twelve

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

Brownson, C., Drum, D. J., Smith, S. E., & Burton Denmark, A. (2011). Differences in suicidal experiences of male and female undergraduate and graduate students. *Journal of College Student Psychotherapy*, *25*(4), 277–294. https://doi.org/10.1080/87568225.2011.605692

Cannizzo, F., Mauri, C., & Osbaldiston, N. (2019). Moral barriers between work/life balance policy and practice in academia. *Journal of Cultural Economy*, *12*(4), 251–264. https://doi.org/10.1080/17530350.2019.1605400

Carlson, K. T. (2001). Tomorrow: Another Look at Adolescent Suicide. *Child and Adolescent Social Work Journal*, *18*(4), 241–252.

Clarke, V., & Braun, V. (2013). *Successful Qualitative Research: A Practical Guide for Beginners*. Sage.

Dodemaide, P., & Crisp, B. R. (2013). Living with suicidal thoughts. *Health Sociology Review*, *22*(3), 308–317. https://doi.org/10.5172/hesr.2013.22.3.308

Drum, D. J., Brownson, C., Burton Denmark, A., & Smith, S. E. (2009). New data on the nature of suicidal crises in college students: Shifting the paradigm. *Professional Psychology: Research and Practice*, *40*(3), 213–222.

Ejim, O. C., Livanou, M., Khan, H., Lindenmeyer, A., Uwom, C., & Manaseki-Holland, S. (2021). Depression, anxiety and stress among international postgraduate students in a UK university: A cross-sectional study. In *Research Square Pre-Print*.

Gunnell, D., Caul, S., Appleby, L., John, A., & Hawton, K. (2020). The incidence of suicide in University students in England and Wales 2000/2001–2016/2017: Record linkage study. *Journal of Affective Disorders*, *261*, 113–120. https://doi.org/10.1016/j.jad.2019.09.079

Hall, R. C. W., Platt, D. E., & Hall, R. C. W. (1999). Suicide risk assessment: A review of risk factors for suicide in 100 patients who made severe suicide attempts: Evaluation of suicide risk in a time of managed care. *Psychosomatics*, *40*(1), 18–27. https://doi.org/10.1016/S0033-3182(99)71267-3

Hawton, K., Casañas I Comabella, C., Haw, C., & Saunders, K. (2013). Risk factors for suicide in individuals with depression: A systematic review. *Journal of Affective Disorders*, *147*(1–3), 17–28. https://doi.org/10.1016/j.jad.2013.01.004

Hazell, C. M., Chapman, L., Valeix, S. F., Roberts, P., Niven, J. E., & Berry, C. (2020). Understanding the mental health of doctoral researchers: a mixed methods systematic review with meta-analysis and meta-synthesis. *Systematic Reviews*, *9*(1), 197. https://doi.org/10.1186/s13643-020-01443-1

Hazell, C. M., Niven, J., Chapman, L., Roberts, P., Cartwright-Hatton, S., Valeix, S., & Berry, C. (2021). Nationwide assessment of the mental health of UK doctoral researchers. *PsyArXiv PrePrint*. https://doi.org/10.31234/OSF.IO/CS73G

Henry, K. L., Lovegrove, P. J., Steger, M. F., Chen, P. Y., Cigularov, K. P., & Tomazic, R. G. (2014). The potential role of meaning in life in the relationship between bullying victimization and suicidal

ideation. *Journal of Youth and Adolescence*, *43*(2), 221–232. https://doi.org/10.1007/s10964-013-9960-2

Higher Education Statistics Agency (HESA). (2018). Higher Education Student Statistics: UK, 2016/17. In *HESA*.

Kinman, G., & Jones, F. (2008). A life beyond work? job demands, work-life balance, and wellbeing in UK Academics. *Journal of Human Behavior in the Social Environment*, *17*(1–2), 41–60. https://doi.org/10.1080/10911350802165478

Kyron, M. J., Rikkers, W., Page, A. C., O'Brien, P., Bartlett, J., LaMontagne, A., & Lawrence, D. (2021). Prevalence and predictors of suicidal thoughts and behaviours among Australian police and emergency services employees. *Australian and New Zealand Journal of Psychiatry*, *55*(2), 180–195. https://doi.org/10.1177/0004867420937774

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

Li, W., Dorstyn, D. S., & Jarmon, E. (2020). Identifying suicide risk among college students: A systematic review. *Death Studies*, *44*(7), 450–458. https://doi.org/10.1080/07481187.2019.1578305

Lindfelt, T., Ip, E. J., Gomez, A., & Barnett, M. J. (2018). The impact of work-life balance on intention to stay in academia: Results from a national survey of pharmacy faculty. *Research in Social and Administrative Pharmacy*, *14*(4), 387–390. https://doi.org/10.1016/j.sapharm.2017.04.008

Linehan, M. M., & Nielsen, S. L. (1981). Assessment of suicide ideation and parasuicide: Hopelessness and social desirability. *Journal of Consulting and Clinical Psychology*, *49*(5), 773–775. https://doi.org/10.1037/0022-006X.49.5.773

Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist*, *41*(9), 954–969. https://doi.org/10.1037/0003-066X.41.9.954

Morris, M., & Crooks, C. (2015). Structural and cultural factors in suicide prevention: The contrast between mainstream and Inuit approaches to understanding and preventing suicide. *Journal of Social Work Practice*, *29*(3), 321–338. https://doi.org/10.1080/02650533.2015.1050655

National Union of Students. (2013). 20 per cent of students consider themselves to have a mental health problem. In *National Union of Students*.

O'Connor, R. (2011). Towards an Integrated Motivational-Volitional model of suicidal behaviour. In R C O'Connor, S. Platt, & J. Gordon (Eds.), *International Handbook of Suicide Prevention:*

Research, Policy and Practice. John Wiley & Sons.

O'Connor, Rory C., & Kirtley, O. J. (2018). The integrated motivational-volitional model of suicidal behaviour. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *373*(1754). https://doi.org/10.1098/rstb.2017.0268

ONS. (2018). Estimating suicide among higher education students, England and Wales: Experimental Statistics. In *Office for National Statistics*.

Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kopper, B. A., & Barrios, F. X. (2001). The Suicidal Behaviors Questionnaire - Revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment*, *8*(4), 443–454.

Pinfold, V., Szymczynska, P., Hamilton, S., Peacocke, R., Dean, S., Clewett, N., Manthorpe, J., & Larsen, J. (2015). Co-production in mental health research: Reflections from the People Study. *Mental Health Review Journal*. https://doi.org/10.1108/MHRJ-09-2015-0028

Shackle, S. (2019). *'The way universities are run is making us ill': inside the student mental health crisis*. The Guardian.

Silverman, M. M., Meyer, P. M., Sloane, F., Raffel, M., & Pratt, D. M. (1997). The Big Ten Student Suicide Study: A 10-year study of suicides on midwestern university campuses. *Suicide & Life-Threatening Behavior*, *27*(3), 285–303. https://doi.org/10.1111/j.1943-278X.1997.tb00411.x

Simon, G. E., Johnson, E., Lawrence, J. M., Rossom, R. C., Ahmedani, B., Lynch, F. L., Beck, A., Waitzfelder, B., Ziebell, R., Penfold, R. B., & Shortreed, S. M. (2018). Predicting suicide attempts and suicide deaths following outpatient visits using electronic health records. *American Journal of Psychiatry*, *175*(10), 951–960. https://doi.org/10.1176/appi.ajp.2018.17101167

Thorley, C. (2017). *Not by degrees: Improving student mental health in the UK's universities*. 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

Windsor-Shellard, B., & Gunnell, D. (2019). Occupation-specific suicide risk in England: 2011-2015. *British Journal of Psychiatry*, *215*(4), 594–599. https://doi.org/10.1192/bjp.2019.69

Wolitzky-Taylor, K., LeBeau, R. T., Perez, M., Gong-Guy, E., & Fong, T. (2020). Suicide prevention on college campuses: What works and what are the existing gaps? A systematic review and meta-analysis. *Journal of American College Health*, *68*(4), 419–429. https://doi.org/10.1080/07448481.2019.1577861

YouGov. (2016). *One in four students suffer from mental health problems.*

9 Tables:

	Total N	*M*(*SD*) or *n*(%)
Participant characteristics		
Age	1263	31.27(9.56)
Gender	1263	
Female		809(64.10)
Male		436(34.50)
Other		11(0.90)
Prefer not to say		7(0.60)
Ethnicity	1263	
White British		620(49.10)
White Other		385(30.50)
Chinese/Chinese British		26(2.10)
Black/African/Caribbean/ Black British		36(2.90)
Asian/Asian British		79(6.30)
Mixed Ethnicity		52(4.10)
Other		51(4.00)
Prefer not to say		14(1.10)
PhD Characteristics		
Mode of study	1262	
Full time		989(78.40)
Part time		273(21.60)
PhD funding	1263	
Full funding		744(58.90)
Partial funding		181(14.30)
Self-funded		338(26.80)
Year of study	1263	
First year		312(24.70)
Second year		350(27.70)
Third year		277(21.90)
Fourth year		203(16.10)
Fifth year		67(5.30)
In continuation		54(4.30)

Table 1. Sample characteristics. *Note: M* = mean; *SD* = standard deviation.