Sheffield Hallam University

Social support, social identification, mental wellbeing, and psychological distress in doctoral students: A person-centred analysis

JACKMAN, Patricia C <http://orcid.org/0000-0002-5756-4494>, SLATER, Matthew J <http://orcid.org/0000-0002-2470-2790>, CARTER, Esther <http://orcid.org/0000-0002-4272-7000>, SISSON, Kelly <http://orcid.org/0000-0002-6190-5730> and BIRD, Matthew D <http://orcid.org/0000-0001-5098-179X>

Citation:

Copyright and re-use policy

Social support, social identification, mental wellbeing, and psychological distress in doctoral students: A person-centred analysis

Patricia C. Jackman, Matthew J. Slater, Esther E. Carter, Kelly Sisson & Matthew D. Bird

Published online: 12 Jul 2022.

Submit your article to this journal ⬚

Article views: 4899

View related articles ⬚

View Crossmark data ⬚

Citing articles: 20 View citing articles ⬚

Routledge
Taylor & Francis Group

Social support, social identification, mental wellbeing, and psychological distress in doctoral students: A person-centred analysis

Patricia C. Jackman [a], Matthew J. Slater [b], Esther E. Carter [a,c], Kelly Sisson [d] and Matthew D. Bird [a]

aSchool of Sport and Exercise Science, University of Lincoln, Lincoln, UK; bSchool of Health, Science and Wellbeing, Staffordshire University, Stoke-on-Trent, UK; cDepartment of Sport, Health and Exercise Science, University of Hull, Hull, UK; dLincoln Academy of Learning and Teaching, University of Lincoln, Lincoln, UK

ABSTRACT

This study extends the doctoral education literature by examining how social support and social identification, as they apply to peers, supervisors, and the academic community, are related to mental wellbeing and psychological distress in doctoral students by using person-centred analysis to create social profiles. Doctoral students ($N = 200$) completed a cross-sectional survey including measures of perceived support, received support, social identification, mental wellbeing, and psychological distress. Adopting a person-centred analysis approach, we identified six distinct social profiles for mental wellbeing, and four social profiles for psychological distress. Further between-profile analysis indicated that the 'high support-identification' profile was associated with higher levels of mental wellbeing and lowest levels of psychological distress. In comparison, the 'low support-identification' profile reported significantly lower mental wellbeing and significantly higher psychological distress. Taken together, the findings demonstrate the value of person-centred analysis and offers new insights into the nuances of relationships between social support, social identification, mental wellbeing, and psychological distress in doctoral students. The theoretical and practical implications arising from this research are discussed.

Introduction

Mental wellbeing in doctoral students has become a topic of increased concern in recent years (Byrom 2020; Metcalfe, Wilson, and Levecque 2018). Numerous studies have provided evidence suggesting heightened levels of psychological distress in this community compared to the general population (e.g. Evans et al. 2018; Levecque et al. 2017). Furthermore, recent meta-analyses indicate that doctoral students report significantly higher levels of stress than the general population (Hazell et al. 2020), and that the prevalence of clinically significant symptoms of depression and anxiety in doctoral students is as high as 17% and 24%, respectively (Satinsky et al. 2021). These figures not only require addressing because of the potentially negative consequences for doctoral students and institutions, but a failure to alter these trends could also have far-reaching societal consequences as doctoral students are fundamental to the development of scientific knowledge and represent the educators and research leaders of the future.

CONTACT Patricia C. Jackman ✉ pjackman@lincoln.ac.uk 🏛 School of Sport and Exercise Science, University of Lincoln, Lincoln LN6 7TS, UK.

Various environmental factors within doctoral research ecologies appear to enhance suscepti-bility to poor mental wellbeing and/or increased psychological distress (Hazell et al. 2020; Jackman et al. 2021, 2022; Mackie and Bates 2019). Although quantitative evidence has accumulated on the relationships between doctoral students and other social agents in the academic community, such as supervisors and peers, this evidence has been drawn primarily from studies that utilised variable-centred approaches, which assume that the group under study are homogenous. However, given the substantial heterogeneity in the doctoral student population, which is arguably more diverse than the undergraduate student population, this suggests that further research that challenges the assumption of homogeneity amongst doctoral students and, therefore, approaches the study of psychosocial correlates of psychological distress and mental wellbeing from a person-centred perspective could offer novel insights. We aimed to deepen understandings of psychological distress and mental wellbeing in doctoral students by adopting person-centred analysis to examine relations between social support, social identification, psychological distress, and mental wellbeing in doc-toral students. As doctoral education is often associated with social isolation (e.g. Janta, Lugosi, and Brown 2014), and that interventions designed to reduce social isolation could be promising for improving mental wellbeing in doctoral students (Hazell et al. 2020), focusing on social resources, such as social support and social identification, could strengthen evidence to inform the develop-ment of such interventions.

Theoretical framework

Social support

Social support is defined as 'an exchange of resources between two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient' (Shumaker and Brownell 1984, 11). The popularity of social support in scholarly work appears to be in large part due to its health-enhancing benefits (e.g. Cohen and Wills 1985; Lakey and Orehek 2011). Within doctoral students, perceptions of support from a variety of people (e.g. supervisor, partner, peer) have been associated with significantly lower stress (Hazell et al. 2020) and depression (Charles, Karnaze, and Leslie 2021). According to Cohen and Wills (1985), social support encapsulates both structural and functional aspects of interpersonal relationships. A structural analysis would focus on examining the size, range, and interconnectedness of an individual's support network, whereas a functional analysis would concentrate on understanding the different components of social support, specifically per-ceptions of available support (i.e. prospective appraisal of support available) and perceptions of received support (i.e. a retrospective rating of support) (Barrera 2000).

Within the social support literature, researchers have generally found a positive association between perceived support and wellbeing (e.g. Lakey and Orehek 2011), but findings concerning the received support-wellbeing relationship are mixed (Reinhardt, Boerner, and Horowitz 2006). For example, some research has found positive associations between received support and aspects of wellbeing (e.g. Chu, Saucier, and Hafner 2010), whereas others have found a negative association (e.g. Bolger, Zuckerman, and Kessler 2000). Given the complex relationships between perceived and received support, and the contrasting relationships between these functional aspects of social support and other variables (e.g. mental wellbeing), researchers have emphasised the importance of investigating both perspectives (Reinhardt, Boerner, and Horowitz 2006).

Although past quantitative studies on social support and (indicators of) mental wellbeing have not always explicitly stated which functional element of social support has been operationalised, researchers have used measures assessing perceived support (e.g. Caesens, Stinglhamber, and Luypaert 2014), received support (e.g. Ülkü-Steiner, Kurtz-Costes, and Kinlaw 2000), or measures that capture both (e.g. Cornér, Löfström, and Pyhältö 2017). To the best of our knowledge, however, no research has yet examined the association between mental wellbeing and both perceived and received support simultaneously. Given the heterogenous approaches to operationalising social

support in the doctoral student mental wellbeing literature and the stronger associations observed in the extant literature between mental wellbeing and perceived rather than received support, examining the co-occurrence of perceived support and received support and how this relates to mental wellbeing and psychological distress in doctoral students could extend understanding.

Social identification

Perceived or received social support does not occur in a vacuum. Indeed, the effectiveness of social support may depend on how the recipient perceives the provider. For example, Gallagher, Meaney, and Muldoon (2014) found participants' cardiovascular responses (e.g. blood pressure, heart rate) altered as a function of whether the provider of the information was perceived to be part of the same group (i.e. the in-group) or not (i.e. the out-group). In other words, whether support is provided by 'one of us' or 'one of them' does appear to make a difference. The social identity approach provides a theoretical framework with which to further understand the notion of in-group and out-group dynamics. The social identity approach includes both social identity theory (Tajfel and Turner 1979) and self-categorisation theory (Turner 1987), and places at the analytical core, the pertinence of group processes in understanding individual and group cognition and behaviour. Within social identity theory, it is proposed that individuals' sense of self includes both one's personal identity and social identities. An individual's personal identity refers to one's perception of themselves to be unique – my own personality. On the other hand, social identities refer to one's knowledge of belonging to certain social group(s) that have psychological value and significance (Tajfel 1972). For instance, to varying degrees, at the organisational level, doctoral students will feel a sense of belonging to the institution where they study. The combination of personal identity and social identities comprise an individual's self-concept (Haslam 2004).

Building on social identity theory, in self-categorisation theory, Turner (1987) conceptualised how a process termed 'depersonalisation' takes place when individuals categorise themselves as part of the group that they share with others (e.g. 'us' members of a particular University). Further, it is this sense of psychological connection with others and belonging within the in-group that promotes a range of positive outcomes (e.g. communication, motivation, see Haslam 2004). More broadly, the social identity approach provides a useful lens to further understand theoretically the concept of belonging, with a view to promoting doctoral student wellbeing. More generally, there is robust and growing evidence in the 'social cure' literature that a strong sense of belonging (i.e. shared social identity) and social support (as well as additional social factors) can promote individuals' mental health and wellbeing (Haslam et al. 2018). More specifically, there is meta-analytic evidence that a sense of social identification with your workplace group is positively associated with wellbeing (Steffens et al. 2017). Additionally, experimental evidence has indicated that, compared to a control (i.e. non-affiliation) condition, individuals perceiving a lack of belonging with their leader are more likely to demonstrate a threat (i.e. unhelpful and unhealthy) psychophysiological response to stress (Slater et al. 2018).

In one of the few studies that has captured the concept of belonging in doctoral students, Cornwall et al. (2019) found that lacking a sense of belonging in the scholarly community was a key stressor outlined by early-stage doctoral students in New Zealand. Further, in a systematic review, Hazell et al. (2020) reported on how doctoral students often express feelings of being alone and isolated, together with feelings that they do not fit within the department, or perhaps more generally in academia. This evidence points to challenges with developing academic identity, and more broadly has highlighted a lack of connectedness, which encompasses elements of belonging, relationships (e.g. with supervisors and peers), and social support.

Current study

Using person-centred analysis to create social profiles, the present study sought to examine how social support and social identification, as they apply to peers, supervisors, and the academic community, are related to mental wellbeing and psychological distress in doctoral researchers. Whereas variable-centred analyses assume all individuals within a sample belong to a profile without differentiating between latent subgroups (Ferguson, Moore, and Hull 2020), a person-centred approach can determine latent sub-populations within a population based on a set of variables (i.e. profiles) (Howard and Hoffman 2018). Latent profile analysis (LPA) could therefore provide an opportunity to determine if specific social profiles are associated with better outcomes (e.g. higher mental wellbeing and lower psychological distress) based on membership within each group. We hypothesised that: (1) profiles with higher perceived support, received support, and identification with peers and the academic community will have higher mental wellbeing, and (2) profiles with higher perceived support and identification with peers and the academic community will have lower psychological distress.

Method

Design and procedures

Ethical approval was granted by the ethics committee at the first author's institution. Participants were primarily recruited for this cross-sectional study via social media posts, which were circulated by the authors from September 2020-October 2021. Information about the study was also circulated via doctoral student newsletters at the first author's institution. Both methods of recruitment included a hyperlink to the questionnaire hosted on Qualtrics. After reading the information sheet, participants were asked to provide consent before completing the questionnaire, which took approximately 20 minutes to complete.

Measures

The questionnaire included items on demographics, which were asked at the end of the questionnaire, after participants had completed our psychological measures.

Perceived support

The 24-item Social Provisions Scale (SPS; Cutrona and Russell 1987) is designed to capture perceptions of available support. Participants were asked to provide ratings of current levels of perceived support from two groups: their peers, and their supervisors. One item ('lack a feeling of intimacy with another person') was removed from the SPS measure for peers as it was not deemed to be appropriate, while this item, along with two others (items 2 and 8), were removed for the same reasons for supervisors. Participants rated their level of agreement with each item on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The internal consistency of the SPS was previously good (α = .92) in university students (Perera and DiGiacomo 2015).

Received support

The Inventory for Socially Supportive Behaviour Short Form (ISSBS) is a 19-item measure designed to assess perceptions of received support (Barrera and Baca 1990). In the current study, seven items were removed[1] as they were not deemed appropriate in the context of relationships between doctoral students and their peers or supervisors. Participants were asked to report the perceived level of support obtained in the previous two weeks from two groups: their peers ('how often did doctoral students at your institution do these activities for you, to you, or with you?'), and their supervisors ('how often did

your supervisors do these activities for you, to you, or with you?'). The scale asks participants to report perceptions of received support on a Likert scale ranging from 0 (*not at all*) to 4 (*about every day*). The full ISSBS showed good internal consistency (α = .84) in previous work (Barrera and Baca 1990).

Social identification

Social identification, which refers to the degree to which an individual identifies with a particular group, was assessed using a 4-item measure initially developed by Doosje, Ellemers, and Spears (1995) and later used by Postmes, Haslam, and Jans (2013). Participants reported their social identification within two groups: the doctoral student community at their institution (e.g. 'I identify with members of the doctoral student community at my institution'), and the academic community at their institution (e.g. 'I identify with members of the academic community at the institution at which I study'). The purpose of this was to differentiate the participants' level of identification with their fellow doctoral students from the academic community at their institution more broadly. Participants rated their level of agreement with the four statements on a scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). The scale previously demonstrated good reliability in university students (α = .83 – Doosje, Ellemers, and Spears 1995).

Mental wellbeing

The Warwick Edinburgh Mental Wellbeing Scale (WEMWBS; Tennant et al. 2007) is a 14-item measure used to assess mental wellbeing. The WEMWBS focuses on positive aspects of mental health and includes items that tap into its affective-emotional, cognitive-evaluative, and psychological functioning dimensions (Tennant et al. 2007). Participants indicated their level of agreement with all 14 items on a Likert scale ranging from 1 (*none of the time*) to 5 (*all of the time*) for the previous two weeks. The WEMWBS has previously displayed excellent internal consistency in doctoral students (e.g. α = .91-.92 – Winter et al. 2021).

Psychological distress

The Kessler-6 (K6) is a brief, 6-item measure of psychological distress (Kessler et al. 2002). Participants indicated how often they felt the items represented their experience over the past four weeks on a Likert-scale ranging from 1 (*none of the time*) to 5 (*all of the time*). A higher score on the K6 is indicative of more psychological distress. The K6 has demonstrated good internal consistency in higher education students (e.g. Sullivan et al. 2019).

Data analysis

Internal consistency, descriptive, and inferential (independent samples *t*-tests, one-way ANOVA) statistics tests were performed in SPSS 25. LPA was conducted on RStudio using the tidyLPA package (Rosenberg et al. 2018). This statistical modelling approach was utilised for estimating two separate social profiles. The first profile was based on the perceived support (i.e. peers and supervisor), received support (i.e. peers and supervisor), and social identification (i.e. doctoral community and academic community) variables. The second profile only used the perceived support and social identification variables. This distinction was necessary as some of the measures employed differed in terms of the timeframe to which participant responses were anchored towards (i.e. two weeks or four weeks). Models with varying levels of profiles (e.g. 1–6 profiles) were tested as previous studies have reported finding the best fitting model, both theoretically and statistically, after comparing 5-6 models (Tein, Coxe, and Cham 2013). To examine model fit, numerous indices were used including the Bayesian Information Criterion (BIC), Akaike's Information Criterion (AIC), entropy, and bootstrap likelihood ratio test (BLRT). Lower BIC and AIC values indicate a better model fit, while entropy specifies how well each model partitions data into profiles. Entropy values can range from 0–1, with higher values representing a better fitting model. Models with values of .80 or higher provide

evidence that those classified within the model are done so with minimal uncertainty (Tein, Coxe, and Cham 2013). The BLRT was used to help determine model parsimony. A statistically significant BLRT shows the current model is a better fit compared to the previous model (e.g. a model with one less profile).

Regression analysis using results from the LPA was conducted to determine any significant statistical relationships between the profiles and mental wellbeing and psychological distress. The first regression used the first profile (i.e. with all the variables) to assess the relationship with mental wellbeing. The second regression used the second profile (i.e. with perceived support and social identification) to examine the relationship with psychological distress. Dummy coding was used as both regression models included categorical predictors (i.e. the profiles determined by the results of the LPA).

Results

Two-hundred doctoral students took part (Table 1). Participants were primarily female, White, full-time, domestic students studying social sciences at UK institutions. Forty-percent reported prior history of poor mental health. Due to the small number of participants who identified with genders other than male or female, or ethnicities other than White-British or White-Other, respondents in these categories were grouped together.

Preliminary analyses

Internal consistency of the scales for the sample was excellent (adapted SPS peers α = .93; adapted ISBSS peers α = .95; adapted SPS supervisors α = .92; adapted ISBSS supervisors α = .94; social identification with peers α = .93; social identification with academic community α = .93; WEMWBS α = .94) or very good (K6 α = .85). With respect to demographic characteristics, significant differences were found across a number of categories. Significantly lower mental wellbeing was reported by participants with history of prior poor mental health versus those without such a history (p < .001) and by those who had moved location to study for their doctoral degree versus those who reported no change (p < .001). Participants with caring responsibilities reported significantly lower perceptions of peer support, received peer support, and received supervisor support compared to participants without caring responsibilities (p < .001), with full-time students also reporting significantly

Table 1. Sample demographics in the study.

Category	Total Sample (N = 200)[1]
Age (20–29/30-39/40+)	103/49/45
Gender (female/male/other[2])	141/51/4
Ethnicity (White-British/White-other or White-unspecified/BAME or Mixed[3]/British unspecified	75/91/19/8
Location of institution (UK/Europe/North America/Australasia or Africa)	133/28/21/14
Enrolment status (full-time/part-time)	151/46
Funding status (funded fees and stipend/funded fees/self-funded)	124/29/43
Domiciliary status (domestic/international)	158/39
Prior history of poor mental health (yes/no/prefer not to say)	80/108/9
Living circumstances for PhD (no location change/move within same country/move to new country)	115/53/29
Caring responsibilities (yes/no)	63/134
Year of study (1st/2nd/3rd/4th+)	49/64/46/38
Discipline (Arts & Humanities/Social Sciences/STEM & Medicine)	10/133/54
Educational background (Undergraduate/ Postgraduate/ Undergraduate & Postgraduate)	28/5/164
Stay-at-home restrictions in institution country[3] (yes/no)	89/107

1. Total figures that do not tally to the full sample size are due to participants not providing data; 2. Comprising: queer female n = 2; cisgender female n = 1; non-binary n = 1.; As the ethnic diversity of the sample was limited, participants from Black, Asian, Mixed, and other ethnic groups were combined.; 4. The stay-at-home restrictions were categorised by using the stay-at-home restrictions database (Ritchie et al. 2020). We used the date of each participants response and the country of their institution to determine whether a stay-at-home restriction was in place.

higher perceived support ($p < .01$) and perceptions of received peer support ($p < .01$) than part-time students. Males also reported significantly greater perceptions of supervisor support than females ($p < .01$), although differences in the sample size should be considered. No significant differences in mental wellbeing or psychological distress were found between participants who completed the survey at a time when there were stay-at-home restrictions due to the Covid-19 pandemic in their institution's country and those who completed the survey when there were no stay-at-home restrictions (see Table 1, note 4).

Using recommended values for interpreting low, moderate, and high mental wellbeing (Warwick Medical School 2022), 25% reported high mental wellbeing ($n = 50$), 30% reported moderate mental wellbeing ($n = 60$), and the remaining 45% reported low mental wellbeing ($n = 90$). Compared to K-6 cut-off values for serious mental illness drawn from research in the general population (Kessler et al. 2003), almost two-thirds (63.5% – $n = 127$) reported psychological distress scores above the cut-off value suggested to be indicative of symptoms of mental ill-health.

Latent profile analysis

For the LPA utilising the perceived support, received support, and social identification variables, a social profile with a 6-profile solution was accepted based on model fit criteria (see Table 2). Class 1 ($n = 56$), the 'low support/identification group', represents participants who reported low support (i.e. perceived and received support from supervisors and peers) and low social identification (i.e. with the doctoral student community and academic community) across all scales. Class 2 ($n = 54$), the 'below-average support/identification group', represented students with below-average support and average social identification, while Class 3 ($n = 29$), the 'high support/identification group', showed high levels of support and high social identification. In Class 4 ($n = 5$), the 'high supervisor support/institutional identification group', students showed low support from peers and low social identification with peers, but high supervisor support and high social identification with the academic community. Class 5 ($n = 12$), the 'high peer support/below-average supervisor support and social identification with academic community group' represented students with high peer support, below-average supervisor support, and below-average social identification. Class 6 ($n = 44$), the 'high social identification group', comprised students with high social identification and average support.

The LPA using only the perceived support and social identification variables determined a 4-profile solution was the best fitting model based on model fit criteria (see Table 2). Class 1 ($n = 68$), the 'average support/identification group', was characterised by those reporting average perceived support and average social identification. Class 2 ($n = 56$), the 'low support/identification group', captured those

Table 2. Latent profile analysis models including classes and model fit indices.

Profile variables	Classes	AIC	BIC	Entropy	BLRT
Perceived support, received support, and social identification	1	3423.44	3463.02	1.00	
	2	3089.27	3151.94	0.89	.01
	3	3023.03	3108.78	0.84	.01
	4	2966.51	3075.35	0.83	.01
	5	2939.58	3071.52	0.84	.01
	6	2905.02	3060.04	0.89	.01
Perceived support and social identification	1	2282.29	2308.68	1.00	
	2	2048.42	2091.31	0.85	.01
	3	1979.88	2039.24	0.84	.01
	4	1967.39	2043.25	0.88	.01
	5	1944.27	2036.63	0.87	.01
	6	1931.27	2040.11	0.85	.01

Table 3. Mental wellbeing and psychological distress means and standard deviations for each social profile.

Social profile	M	SD	Comparison to cut-off values[1]
Mental wellbeing			
Low support/identification (*n* = 56)	2.74	0.75	Low
Below-average support/identification (*n* = 54)	2.97	0.57	Low
High support/identification (*n* = 29)	3.37	0.62	Moderate
High supervisor support/institutional identification (*n* = 5)	3.54	0.90	Moderate
High peer support/below-average supervisor and social identification with academic community (*n* = 12)	2.69	0.29	Low
High social identification (*n* = 44)	3.37	0.67	Moderate
Psychological distress			
Average support/identification (*n* = 68)	2.42	0.73	Above
Low support/identification (*n* = 56)	2.65	0.93	Above
High peer support and social identification/low supervisor support (*n* = 5)	2.93	0.45	Above
High support/identification (*n* = 71)	2.20	0.70	Above

1. Cut-off values for low, moderate, and high mental wellbeing on the WEMWBS were based on the scores proposed by the Warwick Medical School (2022), while cut-off values for the K6 were based on the Kessler et al. (2003) study, which proposed a cut-off score suggestive of mental illness. As we computed mean rather than sum scores, cut-off values proposed in past literature were divided by the total number of items in the scale.

with low perceived support and low social identification. For Class 3 (*n* = 5), the 'high peer support and social identification/low supervisor support group', participants reported high perceived support from peers, very low perceived support from supervisors, high social identification with the doctoral student community, and below-average social identification with the academic community. Those in Class 4 (*n* = 71), the 'high support/identification group', displayed high levels of perceived support and high levels of social identification.

Regression analysis

Results from the first regression using the 6-profile model showed a statistically significant relationship between the 6-profile model and mental wellbeing, $F(5, 194) = 7.61$, $p < .01$, $R^2 = .16$. When compared with participants in the 'high support/identification group' (Class 3), significantly lower levels of mental wellbeing were reported by those in the: 'high peer support/below-average supervisor support and social identification with the academic community group' (Class 5), $\beta = -.68$, $p < .01$; 'low support/identification group'(Class 1), $\beta = -.64$, $p < .01$; and 'below-average support/identification group' (Class 2), $\beta = -.41$, $p < .01$. Moreover, compared to cut-off values for interpreting the WEMWBS (Warwick Medical School 2022), mean scores for the 'high peer support/below-average supervisor support and social identification with the academic community group', 'low support/identification group', and 'below-average support/identification group' were suggestive of low mental wellbeing (Table 3). There were no significant differences in the levels of mental wellbeing reported by those in the 'high supervisor support/institutional identification group' (Class 4) or the 'high social identification group' (Class 6) versus the 'high support/identification group' (Class 3). Figure 1 depicts the six profiles and their standardised means and errors.

The regression using the 4-profile model displayed a statistically significant relationship between the model and psychological distress, $F(3, 196) = 7.61$, $p < .01$, $R^2 = .06$. In comparison to cut-off values for symptoms of mental illness (Kessler et al. 2003), the mean score for all groups was above the cut-off value (Table 3). When compared to those in the 'high support/identification group' (Class 4), significantly more psychological distress was reported by participants in the: 'low support/identification group' (Class 2), $\beta = .44$, $p < .01$; and the 'high peer support and social identification/low supervisor support group' (Class 3), $\beta = .73$, $p = .04$. There were no significant differences in psychological distress between the 'average support/identification group' (Class 1) and the 'high support/identification group' (Class 4). The four profiles and their standardised means and errors are displayed in Figure 2.
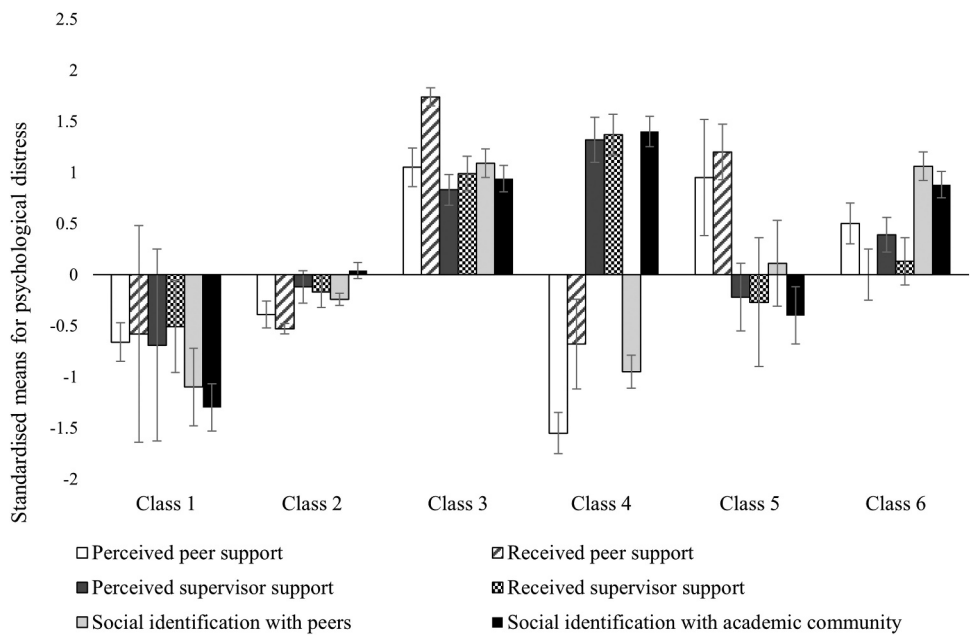
Figure 1. Graphical representation of mental wellbeing for the six identified social profiles.
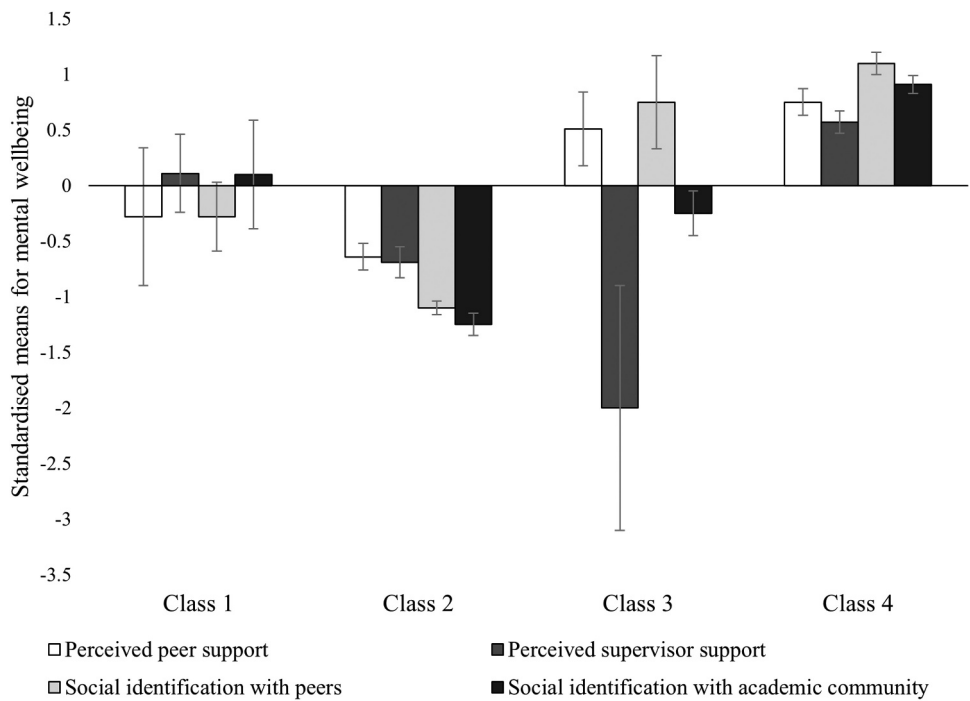

Figure 2. Graphical representation of psychological distress for the four identified social profiles.

Discussion

Our findings concur with past research (e.g. Byrom et al. 2020; Levecque et al. 2017) by indicating that a high proportion of doctoral students report low mental wellbeing and/or high levels of psychological distress. Within our sample of doctoral students, six distinct social profiles were identified for mental wellbeing, whereas four social profiles were generated for psychological distress. The LPA for mental wellbeing and psychological distress both generated profiles that may be considered high support and identification, low support and identification, and around average support and identification. As such, this suggests that within each group, these participants' perceptions of the social environment were relatively similar across all social variables in relation to other participants. Of note, participants in the 'high support/identification group' reported the second highest mental wellbeing and lowest psychological distress, with participants in this social profile reporting significantly higher mental wellbeing than the 'below-average support/ identification group' and 'low support/identification group'. It is worth noting that although mental wellbeing was highest in the 'high supervisor support/institutional identification group', this profile only represented 2.5% of the sample.

Our findings extend previous evidence indicating positive relations between psychological health indices and perceived support (Lakey and Orehek 2011), received support (Chu, Saucier, and Hafner 2010), and social identity (Haslam et al. 2018; Steffens et al. 2017) individually by demonstrating that a blend of higher support from supervisors and peers, stronger identification with peers, and greater identification with the academic community at an institution was strongly related to positive psychological health outcomes. This supports previous evidence demonstrating the interaction between social identification and support (Gallagher, Meaney, and Muldoon 2014). However, the profile with higher support and identification represented less than 15% of students for our mental wellbeing analysis, whereas the 'below-average support/identification group' and 'low support/identification group' profiles each captured 28% and 27% of participants, respectively. This figure therefore reinforces concerns with mental wellbeing in this community (Byrom et al. 2020).

In addition to relatively consistent social support-identification profiles, several mixed profiles emerged. A novel finding in the context of the doctoral education literature is that this study appears to offer the first quantitative study to evidence relationships between social identification and both mental wellbeing and psychological distress. This is in-line with meta-analytical evidence positively relating social identification and wellbeing in workplace settings (Steffens et al. 2017), and more broadly adds weight to the social cure literature advocating social identification as an influential social resource for psychological health (Haslam et al. 2018). The 'below-average support/identification group' reported significantly lower mental wellbeing than the 'high support/identification group', whereas the 'high social identification group' reported lower, but not significantly different mental wellbeing compared to the 'high support/identification group'. In turn, it appears that a sense of social identification could somewhat buffer doctoral students' mental wellbeing in the absence of high levels of perceived and received social support.

Peer group interactions are negatively related to symptoms of mental ill-health (Hazell et al. 2020) and it has been proposed that peer support could help to prevent research-related stress (Sufyan and Ghouri 2020). However, our analyses revealed an important finding: peer support and a sense of identification with peers without high supervisory support and identification with the academic community at their institution were related to maladaptive outcomes. Although the 'high peer support/below-average supervisor support and social identification with academic community' and 'high peer support and social identification/low supervisor support' groups in our mental well being and psychological distress analyses were very small, scores for each scale within these profiles were significantly lower than the 'high support/identification group'. Therefore, although high peer support and sense of identification with peers was positively correlated with mental wellbeing and negatively related to psychological distress, thus reinforcing the potential value of peer-

related interventions (e.g. Homer et al. 2021), our findings suggest that peer support and identification with peers alone are not sufficient to make up for lower perceived and received support from supervisors and social identification with the academic community.

Additionally, although the 'high supervisor support/institutional identification group' comprised a very small number of participants in the mental wellbeing LPA, the variations in this profile provide an interesting comparison to the above points related to the potential shortcomings of a reliance on peer support. Specifically, even though participants in the 'higher supervisor support/institutional identification group' contrasted to the 'high support/identification group', mental wellbeing scores did not differ significantly between these groups. This highlights the importance of perceived and received support from supervisors and social identification with the wider academic community at an institution for mental wellbeing over and above peer support and identification. However, these findings should be treated with caution as: the sample size in this social profile was very small and the potential impact of Covid-19 restrictions on peer-to-peer interactions remains unknown. Thus, although difficult to draw firm conclusions, the analysis for mental wellbeing does nonetheless illustrate the importance of supervisors and the academic community, while further underscoring the perils of relying on peers for protecting psychological health.

Limitations and future directions

This study is not without limitations. First, data were collected after the onset of the Covid-19 pandemic. Although we attempted to control for the potential impact of stay-at-home restrictions and found no significant differences between groups using this approach, the impact of the pandemic on the variables assessed remains unknown. While we can draw some conclusions based on our data, future studies should critically test the findings presented here. Second, there was under-representation of doctoral students who identify with a gender other than female, report their ethnicity as Black, Asian, or specific ethnic minorities, and were studying in the arts or humanities, thus highlighting groups within which further research is warranted. Third, the findings are drawn from cross-sectional data, thus preventing inferences about causality. Future longitudinal studies are needed to examine the associations between the study variables, including the direction of these relationships.

Conclusions

As the first study to use person-centred analysis to examine social correlates of mental wellbeing and psychological distress in doctoral students, our results demonstrated that profiles with high social support and social identification, as they apply to peers, supervisors, and the academic community, are strongly related to mental wellbeing and psychological distress in this group. Furthermore, the identification of different social profiles underscores the key role of supervisor support and identification with the academic community for doctoral students' mental wellbeing and psychological distress. Findings extend understandings of risk and protective factors related to mental wellbeing and psychological distress in doctoral education.

Note

1. The removed items were: 'told you that he/she feels close to you'; 'comforted you by showing you some physical affection'; 'did some activity together to help you get your mind off things'; 'gave or loaned you over $25'; 'provided you with a place to stay'; 'loaned or gave you something (a physical object) that you needed'; and 'went with you to someone to take action'.

Disclosure statement

Notes on contributors

Patricia C. Jackman is a Senior Lecturer in Sport and Exercise Psychology at the University of Lincoln, UK. Her research interests in higher education include mental health, psychological wellbeing, and professional development in doctoral and early career researchers. Additionally, she conducts research on flow experiences and goal setting in performance contexts.

Matthew J. Slater is a Professor of Sport and Exercise Psychology at Staffordshire University, UK. His research expertise focuses on the social identity approach to group dynamics and leadership from a psychological health and performance perspective.

Kelly Sisson is a Senior Lecturer and Programme Leader for the Academic Professional Apprenticeship in the Lincoln Academy of Learning and Teaching at the University of Lincoln, UK. Her research interests in higher education include mental health and psychological wellbeing in doctoral students and early career academic staff.

Esther E. Carter is a doctoral researcher at the University of Hull, UK. Her doctoral research is investigating the use of greenspace exercise interventions to tackle health inequalities. Her research interests in higher education include green exercise, goal setting, mental health, and psychological wellbeing in students.

Matthew D. Bird is a Lecturer in Sport and Exercise Psychology at the University of Lincoln, UK. His research interests include mental health literacy, stigma, attitudes, and intentions towards mental health help-seeking in university students.

ORCID

Patricia C. Jackman http://orcid.org/0000-0002-5756-4494
Matthew J. Slater http://orcid.org/0000-0002-2470-2790
Esther E. Carter http://orcid.org/0000-0002-4272-7000
Kelly Sisson http://orcid.org/0000-0002-6190-5730
Matthew D. Bird http://orcid.org/0000-0001-5098-179X

References

Barrera, M, and L. M. Baca. 1990. "Recipient Reactions to Social Support: Contributions of Enacted Support, Conflicted Support and Network Orientation." *Journal of Social and Personal Relationships* 7 (4): 541–551. doi:10.1177/0265407590074010.

Barrera, M. 2000. "Social Support Research in Community Psychology." In *Handbook of Community Psychology*, edited by J. Rappaport and E. Seidman, 215–245. Boston: Springer.

Bolger, N., A. Zuckerman, and R. C. Kessler. 2000. "Invisible Support and Adjustment to Stress." *Journal of Personality and Social Psychology* 79 (6): 953–961. doi:10.1037//0022-3514.79.6.953.

Byrom, N. 2020. "COVID-19 and the Research Community: The Challenges of Lockdown for Early-Career Researchers." *Elife* 9: e59634. doi:10.7554/eLife.59634.

Byrom, N. C., L. Dinu, A. Kirkman, and G. Hughes. 2020. "Predicting Stress and Mental Wellbeing among Doctoral Researchers." *Journal of Mental Health* 1–9. doi:10.1080/09638237.2020.1818196.

Caesens, G., F. Stinglhamber, and G. Luypaert. 2014. "The Impact of Work Engagement and Workaholism on Well-Being: The Role of Work-Related Social Support." *Career Development International* 19 (7): 813–835. doi:10.1108/CDI-09-2013-0114.

Charles, S. T., M. M. Karnaze, and F. M. Leslie. 2021. "Positive Factors Related to Graduate Student Mental Health." *Journal of American College Health* 1–9. Advance online publication. doi:10.1080/07448481.2020.1841207.

Chu, P. S., D. A. Saucier, and E. Hafner. 2010. "Meta-Analysis of the Relationships between Social Support and Well-Being in Children and Adolescents." *Journal of Social and Clinical Psychology* 29 (6): 624–645. doi:10.1521/jscp.2010.29.6.624.

Cohen, S., and T. A. Wills. 1985. "Stress, Social Support, and the Buffering Hypothesis." *Psychological Bulletin* 98 (2): 310–357. doi:10.1037/0033-2909.98.2.310.

Cornér, S., E. Löfström, and K. Pyhältö. 2017. "The Relationship between Doctoral Students' Perceptions of Supervision and Burnout." *International Journal of Doctoral Studies* 12: 91–106. doi:10.28945/3754.

Cornwall, J., E. C. Mayland, J. van der Meer, R. A. Spronken-Smith, C. Tustin, and P. Blyth. 2019. "Stressors in Early-Stage Doctoral Students." *Studies in Continuing Education* 41 (3): 363–380. doi:10.1080/0158037X.2018.1534821.

Cutrona, C. E., and D. Russell.1987. "The Provisions of Social Relationships and Other Adaptation to Stress." In *Advances in Personal Relationships*, edited by Warren H. Jones and Daniel Perlman, 37–67. Stamford: JAI Press.

Doosje, B., N. Ellemers, and R. Spears. 1995. "Perceived Intragroup Variability as a Function of Group Status and Identification." *Journal of Experimental Social Psychology* 31 (5): 410–436. doi:10.1006/jesp.1995.1018.

Evans, T. M., L. Bira, J. B. Gastelum, L. T. Weiss, and N. L. Vanderford. 2018. "Evidence for a Mental Health Crisis in Graduate Education." *Nature Biotechnology* 36 (3): 282–284. doi:10.1038/nbt.4089.

Ferguson, S. L., E. W. G. Moore, and D. M. Hull. 2020. "Finding Latent Groups in Observed Data: A Primer on Latent Profile Analysis in Mplus for Applied Researchers." *International Journal of Behavioral Development* 44 (5): 458–468. doi:10.1177/0165025419881721.

Gallagher, S., S. Meaney, and O. T. Muldoon. 2014. "Social Identity Influences Stress Appraisals and Cardiovascular Reactions to Acute Stress Exposure." *British Journal of Health Psychology* 19 (3): 566–579. doi:10.1111/bjhp.12056.

Haslam, S. A. 2004. *Psychology in Organizations*. 2nd ed. Melbourne: Sage.

Haslam, C., J. Jetten, T. Cruwys, G. A. Dingle, and S. A. Haslam. 2018. *The New Psychology of Health: Unlocking the Social Cure*. Oxfordshire: Routledge.

Hazell, C. M., L. Chapman, S. F. Valeix, P. Roberts, J. E. Nivin, and C. Berry. 2020. "Understanding the Mental Health of Doctoral Researchers: A Mixed Methods Systematic Review with Meta-Analysis and Meta-Synthesis." *Systematic Reviews* 9 (1): 197–225. doi:10.1186/s13643-020-01443-1.

Homer, S. R., L. Solbrig, D. Djama, A. Bentley, S. Kearns, and J. May. 2021. "The Researcher Toolkit: A Preventative, Peer-Support Approach to Postgraduate Research Student Mental Health." *Studies in Graduate and Postdoctoral Education* 12 (1): 7–25. doi:10.1108/SGPE-06-2020-0039.

Howard, M. C., and M. E. Hoffman. 2018. "Variable-Centred, Person-Centred, and Person-Specific Approaches: Where Theory Meets the Method." *Organizational Research Methods* 21 (4): 846–876. doi:10.1177/1094428117744021.

Jackman, P. C., L. Jacobs, R. Hawkins, and K. Sisson. 2021. "Mental Health and Psychological Wellbeing in the Early Stages of Doctoral Study: A Systematic Review." *European Journal of Higher Education* 1–21. Advance online publication. doi:10.1080/21568235.2021.1939752.

Jackman, P. C., R. Sanderson, J. Allen-Collinson, and L. Jacobs. 2022. "'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." *Journal of Further and Higher Education* 1–16. doi:10.1080/0309877X.2021.2023732.

Janta, H., P. Lugosi, and L. Brown. 2014. "Coping with Loneliness: A Netnographic Study of Doctoral Students." *Journal of Further and Higher Education* 38 (4): 553–571. doi:10.1080/0309877X.2012.726972.

Kessler, R. C., G. Andrews, L. J. Colpe, E. Hiripi, D. K. Mroczek, S. L. T. Normand, E. E. Walters, and A. M. Zaslavsky. 2002. "Short Screening Scales to Monitor Population Prevalence and Trends in Non-Specific Psychological Distress." *Psychological Medicine* 32 (6): 959–976. doi:10.1017/S0033291702006074.

Kessler, R. C., P. R. Barker, L. J. Colpe, J. F. Epstein, J. C. Gfroerer, E. Hiripi, M. J. Howes, et al. 2003. "Screening for Serious Mental Illness in the General Population." *Archives of General Psychiatry* 60 (2): 184–189. doi:10.1001/archpsyc.60.2.184.

Lakey, B., and E. Orehek. 2011. "Relational Regulation Theory: A New Approach to Explain the Link between Perceived Social Support and Mental Health." *Psychological Review* 118 (3): 482–495. doi:10.1037/a0023477.

Levecque, K., F. Anseel, A. De Beuckelaer, J. Van der Heyden, and L. Gisle. 2017. "Work Organization and Mental Health Problems in PhD Students." *Research Policy* 46 (4): 868–879. doi:10.1016/j.respol.2017.02.008.

Mackie, S. A., and G. W. Bates. 2019. "Contribution of the Doctoral Education Environment to PhD Candidates' Mental Health Problems: A Scoping Review." *Higher Education Research and Development* 38 (3): 565–578. doi:10.1080/07294360.2018.1556620.

Metcalfe, J., S. Wilson, and K. Levecque. 2018. "*Exploring Wellbeing and Mental Health and Associated Support Services for Postgraduate Researchers*." Vitae: The Careers Research and Advisory Centre (CRAC), https://www.ukri.org/wp-content/uploads/2018/05/RE_141221-MentalHealthReportFinal.pdf

Perera, H. N., and M. DiGiacomo. 2015. "The Role of Trait Emotional Intelligence in Academic Performance during the University Transition: An Integrative Model of Mediation via Social Support, Coping, and Adjustment." *Personality and Individual Differences* 83: 208–213. doi:10.1016/j.paid.2015.04.001.

Postmes, T., A. S. Haslam, and L. Jans. 2013. "A Single-Item Measure of Social Identification: Reliability, Validity and Utility." *British Journal of Social Psychology* 52 (4): 597–617. doi:10.1111/bjso.12006.

Reinhardt, J. P., K. Boerner, and A. Horowitz. 2006. "Good to Have but Not to Use: Differential Impact of Perceived and Received Support on Well-Being." *Journal of Social and Personal Relationships* 23 (1): 117–129. doi:10.1177/0265407506060182.

Ritchie, H., E. Mathieu, L. Rodés-Guirao, C. Appel, C. Giattino, E. Ortiz-Ospina, J. Hasell, B. Macdonald, D. Beltekiann, and M. Roser. 2020. "Coronavirus Pandemic (COVID-19)." Published online at OurWorldInData.org: https://ourworldindata.org/coronavirus

Rosenberg, J. M., P. N. Beymer, D. J. Anderson, C. J. Van Lissa, and J. A. Schmidt. 2018. "tidyLPA: An R Package to Easily Carry Out Latent Profile Analysis (LPA) Using open-source or Commercial Software." *Journal of Open Source Software* 3 (30): 978. doi:10.21105/joss.00978.

Satinsky, E. N., T. Kimura, M. V. Kiang, R. Abebe, S. Cunningham, H. Lee, X. Lin, et al. 2021. "Systematic Review and meta-analysis of Depression, Anxiety, and Suicidal Ideation among Ph.D. Students." *Scientific Reports* 11 (1): 14370. doi:10.1038/s41598-021-93687-7.

Shumaker, S. A., and A. Brownell. 1984. "Toward a Theory of Social Support: Closing Conceptual Gaps." *Journal of Social Issues* 40 (4): 11–36. doi:10.1111/j.1540-4560.1984.tb01105.x.

Slater, M. J., M. J. Turner, A. L. Evans, and M. V. Jones. 2018. "Capturing Hearts and Minds: The Influence of Relational Identification with the Leader on Followers' Mobilization and Cardiovascular Reactivity." *The Leadership Quarterly* 29 (3): 379–388. doi:10.1016/j.leaqua.2017.08.003.

Steffens, N. K., S. A. Haslam, S. C. Schuh, J. Jetten, and R. van Dick. 2017. "A Meta-Analytic Review of Social Identification and Health in Organizational Contexts." *Personality and Social Psychology Review* 21 (4): 303–335. doi:10.1177/2F1088868316656701.

Sufyan, M., and A. A. Ghouri. 2020. "Why Fit in When You Were Born to Stand Out? The Role of Peer Support in Preventing and Mitigating Research-Related Stress among Doctoral Researchers." *Social Epistemology* 34 (1): 12–30. doi:10.1080/02691728.2019.1681562.

Sullivan, P., M. Blacker, J. Murphy, and J. Cairney. 2019. "Levels of Psychological Distress of Canadian University Student-Athletes." *Canadian Journal of Higher Education* 49 (1): 47–59. doi:10.7202/1060823ar.

Tajfel, H. 1972. "Some Developments in European Social Psychology." *European Journal of Social Psychology* 2 (3): 307–321. doi:10.1002/ejsp.2420020307.

Tajfel, H., and J. Turner. 1979. "An Integrative Theory of Intergroup Conflict." In *Organizational Identity: A Reader*, edited by M. J. Hatch and M. Schultz, 56–65. Oxford: Oxford University Press.

Tein, J-Y., S. Coxe, and H. Cham. 2013. "Statistical Power to Detect the Correct Number of Classes in Latent Profile Analysis." *Structural Equation Modeling* 20 (4): 640–657. doi:10.1080/10705511.2013.824781.

Tennant, R., L. Hiller, R. Fishwick, S. Platt, S. Joseph, S. Weich, J. Parkinson, J. Secker, and S. Stewart-Brown. 2007. "The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): Development and UK Validation." *Health and Quality of Life Outcomes* 5 (1): 63–76. doi:10.1186/1477-7525-5-63.

Turner, J. C. 1987. "A Self-Categorisation Theory". In *Rediscovering the Social Group: A self-categorisation Theory*, ed. J. C. Turner, M. A. Hogg, P. J. Oakes, S. D. Reicher, and M. S. Wetherell., 42–67. Oxford: Blackwell.

Ülkü-Steiner, B., B. Kurtz-Costes, and C. R. Kinlaw. 2000. "Doctoral Student Experiences in gender-balanced and male-dominated Graduate Programs." *Journal of Educational Psychology* 92 (2): 296–307. doi:10.1037/0022-0663.92.2.296.

Warwick Medical School. 2022. "Collect, Score, Analyse and Interpret WEMWBS". https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/using/howto/

Winter, T., B. C. Riordan, J. A. Hunter, K. Tustin, M. Gollop, N. Taylor, J. Kokaua, R. Poulton, and D. Scarf. 2021. "A Longitudinal Study of Mental Wellbeing in Students in Aotearoa New Zealand Who Transitioned into PhD Study." *Frontiers in Psychology* 12: 1715. doi:10.3389/fpsyg.2021.659163.