

Mental health during the PhD adventure: findings for Flanders 2013 and 2018

Authors: Katia Levecque¹, Alain De Beuckelaer^{1,2}, Anneleen Mortier¹

1 ECOOM Ghent University, Department of Personnel Management, Work and Organizational Psychology

2 Radboud University, Nijmegen, Institute for Management Research

MENTAL HEALTH IN ACADEMIA: DISCOURSE AND EVIDENCE BASE

Although the scientific evidence base on mental health in academia is still limited (see Levecque et al. 2017), the issue of mental health problems experienced by academics has in recent years been voiced around the world on social media, traditional media and on high-status scientific platforms such as *Nature* and *Science*. In most cases, reports cover testimonies, shared experiences and reflections on how the academic world has changed and on what kind of initiatives are being set up. Most of the time, these stories cover problems with wellbeing and mental health, things like depression, anxiety, burnout, substance abuse and social isolation. In some rare cases, they also extend to suicide. Many of these stories refer to fast science and publication pressures, to far-reaching performance systems and competition for resources, to limited opportunities for promotion or job security, to conflicting work-life roles, power abuses, social isolation and stigma and taboo relating to mental health.

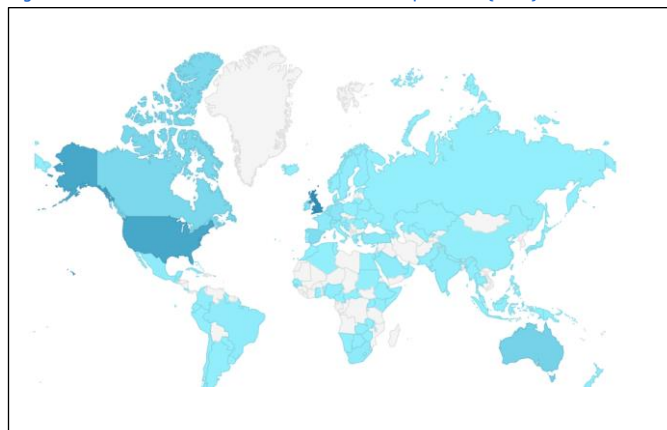
In recent years, as discourse on mental health issues in academia became more prevalent, many universities (both within Europe and beyond) have put the issue on their policy agenda. For some universities, this was a first in their institutional history. For others, mental health moved up on their list of priorities. While some universities have opted for policy which focuses on the individual (especially approaches geared towards reducing stress and increasing resilience), others have opted for policy approaches that seek to support performance and skill development. Yet other universities are evolving towards an organizational approach, as witnessed by the recently developed Stepchange Framework for Mental Health developed by the Universities UK (<https://www.universitiesuk.ac.uk>). But in many universities, stigma and taboo surrounding mental health

problems are still stifling open discourse. This is true despite several bottom-up initiatives of stakeholders such as Eurodoc and the Marie Curie Alumni Association. In universities where the issue of mental health is not or no longer silenced, efforts are increasing to set up or extend the evidence base on the issue. This does not immediately lead to scientific publications that would allow for an adequate and reliable picture to form of both the prevalence and the determinants of mental health problems experienced by various categories of academics. The need for a robust scientific evidence base has been stressed at the first international conference of mental health and wellbeing among PhD students, organized in May 2019 in collaboration with *Nature*.

The more candid nature of discourse on mental health in academia is in no small measure due to the openness of the PhD holders in Flanders who answered questions on mental health in the *Survey of Junior Researchers 2013*. Findings showed that 31.8% of PhD students in Flanders had a risk of having or developing common mental health problems, especially depression. This risk was 1.8 to 2.8 times higher compared to other highly-educated groups in Flanders. Analyses also showed that this risk related significantly to several characteristics of the work and organizational context of universities. For more details, we refer to ECOOM-brief 12 and Levecque et al. (2017). This study drew worldwide attention as soon as it was published, among others in *Science* and *Nature* (see e.g. <https://www.nature.com/articles/nj7650-383a>, but also Gewin & Levecque, 2018). In Almetrics Top 100 of 2017 this Flemish study ranked second, indicating that it was the second best worldwide in sparking the public's interest (<https://www.altmetric.com/top100/2017>). Figure 1 shows the twitter-activity worldwide relating to the study. On 18 September 2019 the study ranked 29th in a (competitive) set of 13,5 million scientific publications. The public debate on the issue shows that the study

findings for Flanders are not unique, but that they are indicative of experiences shared by many academics outside of Flanders as well.

Figure 1. Prevalence of twitter-activities on Levecque et al. (2017)



Source: <https://www.altmetric.com/top100/2017/#list>

In the current study, we progress our focus on mental health of PhD students in Flanders using new survey data, gathered in 2018. We formulate five specific research questions:

1. *How prevalent are mental health problems in PhD students in Flanders in 2018?*
2. *How does this compare to the mental health of PhD students in 2013?*
3. *Does mental health of PhD students differ according to gender, nationality, science cluster and PhD phase?*
4. *Does mental health of PhD students differ according to the work and organizational context?*
5. *Is mental health of PhD students in Flanders comparable to that of PhD students in other regions or to other groups on the Flemish labor market?*

We answer these research questions using data from the *Survey of Junior Researchers 2018*, as well as the *Survey of Junior Researchers 2013*. Both surveys were set up by ECOOM Ghent University and invited all junior researchers from all five Flemish universities to participate in the online questionnaire on PhD life. For the current study, we restrict our analyses to information on junior researchers who are in a PhD trajectory ($N_{2013}=3659$; $N_{2018}=3359$). For more details on both surveys, we refer to ECOOM-briefs 8 and 17.

HOW PREVALENT ARE MENTAL HEALTH PROBLEMS IN PHD STUDENTS IN FLANDERS IN 2018?

In both *Surveys of Junior Researchers 2013* and *2018*, we queried mental health using the *General Health Questionnaire* (GHQ) (see Levecque et al. 2017 for more details). The GHQ is a screening instrument used to identify psychological distress and risk of a common mental disorder (CMD). The GHQ does not offer a psychiatric diagnosis. Only a psychiatric interview can lead to such a diagnosis.

The GHQ is the most commonly used assessment tool of mental health worldwide. In the current study, we use the GHQ-12 item version, which measures an individual's experience of twelve symptoms in the past weeks as compared to his/her usual experience. The symptoms refer to depression and social dysfunction. The GHQ scoring method defines a symptom as "present" when it has been experienced more or much more than usual. Individuals with four or more symptoms (GHQ4+) are at risk of having or of developing a common mental health disorder, especially depression. In Table 1, we present both the prevalence of all twelve GHQ-symptoms and the risk of having or developing mental health problems (GHQ4+). We report findings for both 2013 and 2018.

Table 1. Prevalence of mental health problems in PhD students in Flanders, 2013 and 2018

	2013 %	2018 %
Felt under constant strain	40.8	43.6
Unhappy and depressed	30.3	32.8
Lost sleep over worry	28.3	31.3
Could not overcome difficulties	26.1	29.5
Could not concentrate	21.7	27.7
Not enjoying day-to-day activities	25.4	27.6
Lost confidence in self	24.4	24.5
Not feeling happy	21.2	23.5
Not playing a useful role	22.5	21.6
Felt worthless	16.1	17.5
Could not make decisions	15.0	15.9
Could not face problems	13.4	14.9
Risk of having or developing mental health problems (GHQ4+)	31.8	35.4

Column 2 in Table 1 shows that rates of mental health problems in PhD students in Flanders in 2018 are still high. As in 2013, the most prevalent symptom (43.6%) is feeling under constant pressure. Table 1 also shows that one in three PhD students reports feeling unhappy and depressed, losing sleep over worry, and an inability to overcome difficulties. About one in four to one in five PhD students report not enjoying day-to-day activities, loss of self-confidence, not playing a useful role, difficulties with concentrating, and a lowered feeling of happiness. As in 2013, a low level of self-worth, the inability to make decisions, and not being able to face problems, were the least reported symptoms. Yet, even these symptoms are reported by one in six PhD students.

In 2018, 35.4% of all PhD students in Flanders show a risk of having or of developing mental health problems (GHQ4+), especially depression. This prevalence is 2.6% higher compared to 2013. Is this a significant increase of mental health problems? Table 3 (see *infra*) offers evidence as to the non-significance of the change (see "year": odds ratio, $OR=1.056$). Table 3 shows that when we account simultaneously for the socio-demographic characteristics of PhD students and the characteristics of their work and organizational context, no significant association can be found between year of survey and GHQ4+.

DOES MENTAL HEALTH OF PHD STUDENTS DIFFER ACCORDING TO GENDER, NATIONALITY, SCIENCE CLUSTER AND PHD PHASE?

Are female PhD students more at risk of having or developing mental health problems than their male colleagues are? Table 2 shows significant gender differences: 33.5% of male PhD students show a risk of having or developing mental health problems (GHQ4+) while this is the case for 37.0% of all female PhD students.

Table 2. Risk of mental health problems (GHQ4+) according to gender, nationality, science cluster and PhD phase in PhD students in Flanders, 2018: percentages

	GHQ4+ %	Sign (S)
Gender		*
Male	33.5	
Female	37.0	
Nationality		***
Belgian	33.8	
EU28	32.8	
Non-EU28	41.9	
Science cluster		n.s.
Exact sciences	34.7	
Biomedical sciences	34.0	
Applied sciences	37.0	
Humanities	34.4	
Social sciences	36.5	
PhD phase		***
Initiating	35.9	
Executing	32.2	
Finishing	43.1	

(S) Significance based on Chi²-test

n.s.=not significant * = p<0.05 ** = p<0.01 *** =p<0.001

Are there significant differences in GHQ4+ according to nationality? Table 2 shows that PhD students from the EU28 report quite similar scores on the GHQ4+ (33.8% and 32.8%, respectively). Significant differences are found between these PhD students and those originating from outside of the EU28. For non-EU28 PhD students, findings point to a risk of mental health problems (GHQ4+) in 41.9% of this population.

Table 2 also differentiates between scientific clusters. It shows that the risk of mental health problems varies between 34.0% (humanities) en 37.0% (applied sciences). Reported differences are not statistically significant.

As concerns PhD phase, findings based on bivariate analyses shown in Table 2 reveal that GHQ4+ is especially (significantly) high in the finishing phase of the PhD trajectory (43.1%). This picture is however adjusted when we simultaneously take into account the socio-demographic characteristics of PhD students and the characteristics of their work and organizational context. As can be seen in Table 3, in a multivariate context, the risk of mental health problems is shown to be

significantly higher in the initial phase of the PhD track as compared to the executing phase (see OR and sign.).

DOES MENTAL HEALTH DIFFER ACCORDING TO THE WORK AND ORGANIZATIONAL CONTEXT?

Answers to these questions can be found in Table 3. Findings show that mental health problems are more prevalent (OR>1) in PhD students who (1) experience higher job demands (such as work load, publication pressure), (2) are hired on a grant rather than an assistantship, and/or (3) work in a team where there is a closed and thus non-democratic decision-making process. We also note more mental health problems in case of (4) family-work conflict, but also (5) work-family conflict. The experience of a family-work conflict refers to an internal conflict that is due to being forced to place family demands above the demands and needs of work. The experience of a work-family conflict refers to an internal conflict that is due to being forced to place work demands above the demands and needs of family, or when situations at work are brought into family life. Table 3 also shows that mental health problems are more prevalent in the population of (6) female PhD students as compared to males.

The risk of mental health problems is shown to be significantly lower (OR<1) (1) in cases where PhD students feel in control of their jobs (i.e. high levels of job variation and job autonomy), (2) in PhD students within the biomedical sciences compared to the exact sciences, and (3) during the finishing phase of the PhD track compared to the initial PhD phase. In addition, Table 3 shows less risk of mental health problems in PhD students who (4) perceive their supervisor as an inspirational leader, (5) who have a strong interest in an academic career, and/or (6) who have a positive perception of the added value of a PhD on the non-academic labour market. PhD students with (7) children also report a significantly lower risk of mental health problems compared to their colleagues without children.

Findings in Table 3 point to the absence of statistically significant differences in risk of mental health problems in the PhD population in Flanders in 2018 compared to 2013. Equally absent are significant differences between the Flemish universities, and between the exact sciences and the applied sciences, social sciences and humanities. Furthermore, no significant association was found between the risk of mental health problems and the perception of one's chances of a future academic career, the age of the PhD student, or the presence of a partner.

The predictors in Table 3 result in a determination coefficient (Nagelkerke R²) of 0.201. This means that 20.1% of the variance in the risk of mental health problems in PhD students in Flanders is explained by the predictors in the model.

Table 3. Predictors of mental health problems (GHQ4+) in PhD students, Flanders 2013-2018 (N₂₀₁₃₊₂₀₁₈=7018): OR, 95% BI and significance

	OR	95% BI	Sign (S)
Constant	0.992		n.s.
Survey year			
2013 (ref)	-	-	-
2018	1.056	(0.928-1.203)	n.s.
Work context			
Job demands	1.850	(1.619-2.114)	***
Job control	0.589	(0.514-0.675)	***
Science cluster			
Exact sciences (ref)	-	-	-
Biomedical sciences	0.752	(0.620-0.912)	**
Applied sciences	1.058	(0.862-1.298)	n.s.
Humanities	0.906	(0.701-1.169)	n.s.
Social sciences	0.878	(0.718-1.073)	n.s.
Type of appointment			
Assistantship (ref.)	-	-	-
Scholarship	1.299	(1.079-1.564)	**
Research project	1.149	(0.949-1.391)	n.s.
No university funding	1.059	(0.806-1.391)	n.s.
Other funding	1.265	(0.938-1.706)	n.s.
Unknown funding	1.411	(0.983-2.024)	n.s.
PhD phase			
Initiating (ref)	-	-	-
Executing	0.675	(0.574-0.794)	***
Finishing	0.882	(0.724-1.075)	n.s.
Inspirational leadership style	0.881	(0.836-0.928)	***
Much interest in an academic career	0.796	(0.698-0.907)	***
Perception of high chance of an academic career	0.936	(0.820-1.068)	n.s.
Positive perception of career outside academia	0.781	(0.721-0.846)	***
Organizational context			
University			
KU Leuven (ref.)	-	-	-
Ghent university	0.972	(0.838-1.127)	n.s.
Antwerp University	1.187	(0.970-1.451)	n.s.
VUB	1.104	(0.912-1.336)	n.s.
Hasselt University	0.927	(0.685-1.255)	n.s.
Closed decision-making in the team	1.122	(1.043-1.207)	**
Family-work conflict	1.230	(1.141-1.325)	***
Work-family conflict	1.320	(1.224-1.423)	***
Sociodemographic characteristics			
Female	1.263	(1.109-1.438)	***
Age	0.992	(0.975-1.008)	n.s.
Partner	0.871	(0.758-1.000)	n.s.
Children	0.637	(0.516-0.787)	***
Model fit :			
LR = 869.55	df = 29	p<0.001	Nagelkerke R ² = 0.201

Note: OR = odds ratio, 95% BI = 95% confidence interval. Ref. = reference category. Significances: * = p < .05, ** = p < .01, *** = p < .001, n.s. = not significant

IS MENTAL HEALTH OF PHD STUDENTS IN FLANDERS COMPARABLE TO ...?

Although the number of studies on mental health problems in academia is on the increase, the opportunities to benchmark the research findings for Flanders remain limited. Among others, this is due to the fact that many statistics are generated using procedures for data collection and data analyses for which the scientific base is lacking or shaky. Another reason for limited benchmarking opportunities is that earlier research has mainly focused on bachelor- and master students (*undergraduates*), or on PhD students as part of a broader population of academics for which only aggregated findings are reported. The few studies that are available on the mental health of PhD students specifically, offer little in the way of benchmarking opportunities, as they are usually restricted to one scientific discipline, university, department or campus, and as such they are prone to discipline- and context related specificity. The research on mental health of academics that is available suggests that self-reported psychological health is generally low. Prevalence rates differ considerably, depending on the sample, the mental health problem, and the measurement instrument that was used. Most studies focus on psychological ill-being, psychological distress, or on depression. Because the problem of mental health is complex and multidimensional, each form of benchmarking needs to be done with caution, not in the least because concurrent validity of measurement instruments is not always high.

When we look at scientific publications on mental health of academics based on the GHQ4+ as in the current study, we see prevalence rates varying between 31.8% in a British study from 2007 in a sample of lecturers and senior lecturers (McLenahan et al. 2007) to 41.8% in another British study of academics (Kinman & Jones, 2008). The prevalence rate observed for PhD students in Flanders in 2013 was 31.8%. For an overview of scientific publications on mental health in academia based on the GHQ, we refer to Levecque et al. (2017). This overview is still up-to-date.

There are however a few studies that are not recorded in scientific databases, but that do offer benchmarking opportunities for our study based on their GHQ4+-information for PhD students. One such study was organized by Leiden University in the Netherlands, which found that no less than 38.3% of their PhD students showed a risk of mental health problems (Van der Weijden et al. 2017). Compared to their colleagues in Flanders, PhD students in Leiden showed higher scores on the symptoms "feeling under constant pressure", "concentration problems", "could not make decisions" and "could not face problems". Prevalence rates for PhD students in Groningen, also in the Netherlands, were even higher: 42.1% showed risk of mental health problems as measured by at least four symptoms in the GHQ-12. For one in four PhD students, the number of reported GHQ-symptoms is seven or more (van Rooij et al. 2019). In comparison to their colleagues in Flanders, PhD students in Groningen report higher prevalence of almost all symptoms in the GHQ-12. For some symptoms, prevalence rates are about 10% higher. This is the case for "not being able to face problems", "feeling unhappy and depressed", "loss of self-confidence", and "not enjoying

day-to-day activities". The biggest difference is observed for concentration problems: the prevalence at Groningen University is double the prevalence reported by PhD students in Flanders.

DISCUSSION

In the past decade, institutions such as the World Health Organization, the International Labour Organization, and the European Commission have encouraged governments and business to put mental health on their list of priorities. Within the *European Framework for Action on Mental Health and Wellbeing* (2016), the EU Joint Action states that it has become imperative to recognize the workplace as both a major factor in the development of mental health problems and as a platform for the introduction and development of effective methods to address mental problems. Mental problems such as burnout, depression; or anxiety do not only negatively impact the quality of life of those suffering as well as on people in their social environment, but also on the quality and quantity of their performance at work. European countries vary considerably in the degree to which they combine these guidelines with their own initiatives and legal frameworks. In Belgium, the so-called Wellbeing at Work Law of 2014, rules that employers must take the measures necessary to prevent psychosocial risks at work, to prevent damage caused by these risks, or to limit such damage (<http://www.werk.belgie.be>).

Internationally, the policy response in the academic sector to the mental health issues in academics is still in its infancy. In many universities mental health is still taboo: academics experiencing mental health problems are stigmatized, and institutional support is often inaccessible, inadequate, or even entirely lacking. In Flanders, wellbeing and mental health are on the policy radar, and a diverse set of initiatives have been set up, in response to the needs that universities have identified in their own employees. Some initiatives take an organizational approach, others focus on the individual. Some initiatives are directly related to mental health, others take an indirect approach and address performance and the development of talents and skills. Recently, the Flemish Interuniversity Council (VLIR) has started tracking the actions taken by Flemish universities in their efforts to address the challenges of wellbeing and mental health in academia.

What evidence base can the academic sector rely on when it comes to developing a policy on safeguarding the mental health of academics? The limited academic attention for mental health of academics has resulted in a lack of scientific underpinning for this work. For decades, researchers have developed strong research traditions when it comes to the wellbeing of employees working outside of universities, but sparse attentions has been given to the wellbeing of employees in academic settings. The existing literature therefore only offers initial insights into the mental health of academics. Solid, fine-grained conclusions on the prevalence of mental health issues, causal mechanisms, contextual differences, and policy implications cannot be offered by scientific literature yet. Therefore, within their own institutional framework, all Flemish universities have set up their own data collections, capturing data streams that are deemed necessary for their own policy purposes. Comparisons between universities are not

easy: there are different foci, different measurement instruments, and different visions. The *Surveys of Junior Researchers*, which gathers data in all five universities in Flanders, therefore offers added value: they enable each university to benchmark their own institutional facts and approach to a broader picture of the mental health of all junior researchers in Flanders.

Based on additional ECOOM-analyses (not shown in this brief), we know that the picture drawn by the *Survey of Junior Researchers* 2018 of the mental health of PhD students in Flanders does not differ essentially from the picture drawn based on the data gathered in 2013. We know that (1) one in three PhD students show risk of having or developing mental health problems (especially depression) and (2) that there are significant associations with several aspects of the work and organizational context in which PhD students prepare their PhD. More specifically, the *Survey of Junior Researchers* points to the same risk factors and leverages: conflicting work and family roles, job demands, job control, leadership styles of supervisors, closed decision-making processes, PhD phase, but also academic aspirations and the perception of professional life after the PhD. In essence, findings based on the *Survey of Junior Researchers* 2018 do not draw a different picture than that drawn in other studies on academics, based on similar or different measures of mental health, regardless of whether or not the study is set up in Flanders (see a.o. University of California-Berkeley 2014; Guthrie et al. 2017; Evans et al. 2018).

The recent scientific discourse on mental health problems in academia prompted a huge range of questions from different stakeholders (PhD students, postdocs, professors, policy makers, care providers, unions, and interest groups such as Eurodoc and the Marie Curie Alumni Association. There are no cookie cutter responses to these questions. Taking a look at the discourse on mental health in academia, one immediately notice the breakdown in communication on the topic, as different actors talk across each other about different aspects of wellbeing and mental health. Misunderstandings occur because there is no shared language and the positions taken are fueled by a variety of (disciplinary) backgrounds, insights, values, objectives, interests or responsibilities. In addition, many assumptions are made which are not or insufficiently supported by empirical data. One recurrent assumption in wellbeing discourse is that the different aspects of wellbeing that are part of the broader umbrella concept "wellbeing", are strongly related, not in the least because they are assumed to be influenced by the same psychosocial risk factors. One additional assumption inferred from the former one is that wellbeing policy measures that succeed in improving one aspect of wellbeing, will also have positive side effects on other aspects of wellbeing. Measurements of efficiency and effectiveness of policy interventions are often based on such implicit assumptions. However, empirical reality demands precaution: correlations between aspects of wellbeing are often (much) less strong than they are assumed to be, not in the least because other constellations of risk factors and leverages are at work. We invite the reader to compare several ECOOM-briefs relating to wellbeing of PhD students in Flanders and assess to what extent risk factors and leverages impact all aspects of wellbeing, or only specific ones. ECOOM-

briefs related to wellbeing that are already available cover general job satisfaction, turnover intentions, vigour and mental health (ECOOM-briefs 12-14 and 18-22). Other aspects of wellbeing are currently being studied. For an overview of the broad range of aspects of wellbeing included in the *Survey of Junior Researchers 2018*, we refer to ECOOM-brief 17.

The many questions and possible answers relating to wellbeing and mental health in academia can only lead to a constructive and solution-oriented debate when stigma and taboo surrounding mental health is rejected, when there is sufficient health literacy to recognize problems and to communicate about them, and when there is a recognition of the cultural sensitivity relating to mental health problems. Clear communication on mental health is sorely needed. We have stressed this need before in a contribution on wellbeing and mental health in academics, written for *The Doctoral Debate* (European Universities Association, December 2018).

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