



# Work organization and mental health problems in PhD students



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## ABSTRACT

Research policy observers are increasingly concerned about the potential impact of current academic working conditions on mental health, particularly in PhD students. The aim of the current study is three-fold. First, we assess the prevalence of mental health problems in a representative sample of PhD students in Flanders, Belgium ( $N = 3659$ ). Second, we compare PhD students to three other samples: (1) highly educated in the general population ( $N = 769$ ); (2) highly educated employees ( $N = 592$ ); and (3) higher education students ( $N = 333$ ). Third, we assess those organizational factors relating to the role of PhD students that predict mental health status. Results based on 12 mental health symptoms (GHQ-12) showed that 32% of PhD students are at risk of having or developing a common psychiatric disorder, especially depression. This estimate was significantly higher than those obtained in the comparison groups. Organizational policies were significantly associated with the prevalence of mental health problems. Especially work-family interface, job demands and job control, the supervisor's leadership style, team decision-making culture, and perception of a career outside academia are linked to mental health problems.

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## 1. Introduction

### 1.1. Mental health concerns at universities

In recent years, journalists, research policy observers and academics have voiced concerns about the potential impact of research conditions in universities on mental health problems (e.g. [The Economist, 2012](#); [Schillebeeckx et al., 2013](#); [Shaw and Ward, 2014](#); [Philips and Heywood-Roos, 2015](#)). These concerns are often related to recent shifts in the organization of academic research, such as increased workloads, intensification and the pace of change (e.g. [Petersen et al., 2012](#); [Shen, 2015](#)). For example, across OECD countries, the number of new PhDs (i.e. recipients of doctorate degrees)

grew from 158,000 in 2000–247,000 in 2012, a rise of 56% ([OECD, 2014](#)). Encouragement by government policy, both at the national and international levels, has led to increased participation rates in the PhD production process ([Robotham, 2008](#)). An unfavorable shift in the labor-supply demand balance, a growing popularity of short-term contracts, budget cuts and increased competition for research resources may paint a bleak picture of academic careers for prospective PhD students (e.g. [Biron et al., 2008](#); [Petersen et al., 2012](#); [Walsh and Lee, 2015](#)).

Although universities were traditionally regarded as low stress environments, research on occupational stress among academics indicates that it is alarmingly widespread and on the rise ([Bozeman and Gaughan, 2011](#); [Reevy and Deason, 2014](#)). Some studies suggest that stress is more prevalent in younger academics (see e.g. [Kinman, 2001](#)), a group that typically faces high levels of job insecurity. As a result, the media increasingly reports testimonies of depression and anxiety, burnout and emotional exhaustion. However, the prevalence of mental health problems as shown in official registries remains low. National figures in 2012 for higher education in the UK, for example, show that approximately one in 500 individuals disclosed a mental health problem to their university

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(Shaw, 2015). Reluctance to seek help is often caused by fear of stigma, retaliation or the expected negative impact on one's future career (OECD, 2015).

### 1.2. Why is the mental health of PhD students important for research policy?

While a genuine concern for individual well-being is probably the most important reason why policymakers should pay attention to mental health problems, we argue that mental health of PhD students should be of concern for three additional main reasons. First, the work of PhD students themselves constitutes a major source of scientific advancement, as a doctoral dissertation requires an original contribution to the scientific knowledge base. Furthermore, the publication of dissertation results is a prerequisite for an academic career (Roach and Sauermann, 2010), making dissertation work a major contributor to academic output (Hagen, 2010; Miller, 2013). Given the compelling evidence for the effects of mental health problems on individuals' research output (Danna and Griffin, 1999), it is to be expected that a sizable cohort of PhD students suffering from mental health problems may affect the overall quality and quantity of individuals' research output.

Second, as most PhD students are part of larger research teams, whose composition determines scientific impact (Lee et al., 2015), PhD students with mental health issues may pose a considerable cost to research institutions and teams. To date, research policy efforts seemed to have focused more on 'hard outcomes' such as publications, impact factors and patents, while ignoring the health effects of 'soft' policy outcomes, such as stress. However, soft outcomes may create serious financial costs for research institutions, and they will impact the functioning of the larger research teams that the individual researchers are part of, thus also determining 'hard' outcomes (see e.g. Goh et al., 2015a,b).

Third, mental health problems of PhD students impact both the supply and entrance to the research industry. Organizational policies that are linked to mental health problems will lead individuals to quit their PhD studies or leave the research industry altogether (Podsakoff et al., 2007). Several studies of PhD students suggest that the dropout numbers range from 30 to 50 percent, depending on the scientific discipline and country (Stubb et al., 2012). Such high turnover will make it difficult for the industry to attract new talent (Lievens and Highhouse, 2003), thus threatening the viability and quality of the academic research industry. Because economic competition between countries is heavily dependent on the nation's scientific advancement and cognitive ability (Rindermann and Thompson, 2011), the prospects of having trained academic researchers not further pursuing a research career because of mental health problems should be a major concern for research policy.

In sum, given the potential importance of mental health problems for research policy, there is an urgent need for systematic empirical data rather than anecdotal information on their prevalence and the organizational policies that are linked to them. Given the current lack of an empirical basis for mental health concerns and solutions, the current study has three aims. First, we aim to inform research policy by assessing mental health prevalence in a large-scale representative sample of PhD students in Flanders, Belgium. Second, to assess the scope of the problem, we compared the mental health of PhD students with that of three other samples, a group of highly educated adults in the general population, a group of highly educated employees and a group of higher education students. Third, with the aim of better understanding how research and organizational policies may relate to mental health, we examined PhD students' perceptions of the academic environment and linked them to mental health problems.

### Evolution in ratio between faculty positions and PhD students, 1999–2014, Flanders

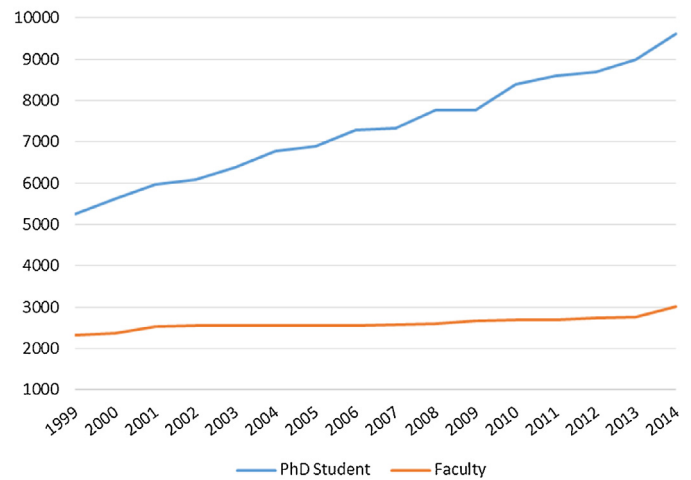


Fig. 1. Evolution in ratio between faculty positions and PhD students, 1999–2014, Flanders (Belgium).

Source: ECOOM (2015).

## 2. Background and literature review

### 2.1. PhD students in Flanders, Belgium

Flanders has seen a rise in PhD production that is substantially larger than in other EU countries: in the academic year 2013–2014, a total of 1724 new doctorates were awarded, which is an increase of 71% compared to 2004–2005 (ECOOM, 2015). To depict the overall characteristics of the PhD student experience in Flanders, we compared it to defining characteristics in the U.S. (see Table 1). While there is considerable overlap between the PhD models in the U.S. and Europe, the length of time-to-degree and the intensiveness of coursework seem the most notable differences. This is probably also the key characteristic of the Flemish PhD model that departs most from U.K. and U.S. models: there are only few compulsory classes that PhD students must attend, instead most of the emphasis is placed on doing actual research in close collaboration with their advisor(s).

Note that in Flanders, and in many European countries, a sizeable group of PhD students have a formal employment agreement with a university and have full-time working schedules and a full scholarship, providing them with a financial situation that is better than most of their counterparts on the private job market. Thus, in contrast to U.K. and U.S. systems, PhD students in this setting do not study on a part-time basis, which means they do not have to balance research with paid work in other areas. In the Flemish context, all universities are basically research universities, and most of their funding comes from the Flemish government. Over the past decade, research output has become an increasingly important determinant of the extent of the university's public funding. More specifically, the universities are encouraged (with financial means) to increase the number of PhDs awarded. As shown in Fig. 1, the number of faculty in Flanders has only marginally increased over the past 15 years, leading to an increased ratio of 3.2 PhD students per faculty member in 2014.

### 2.2. Prior research on mental health in the university sector

A growing line of research has examined mental health problems in academic contexts. Although this undertaking has clearly yielded a range of important insights, we believe it to be currently

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