CWTS POLICY REPORT
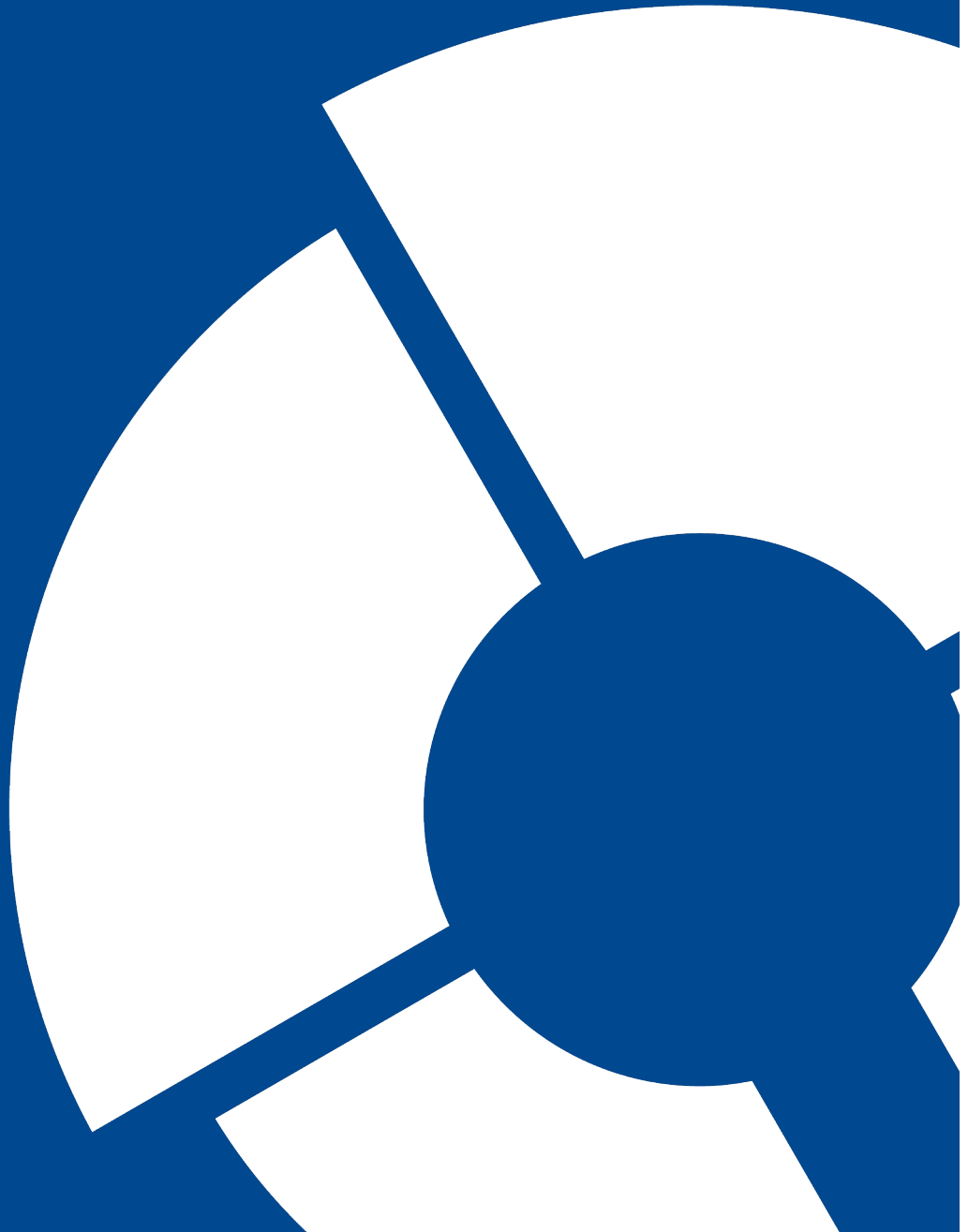Meaningful metrics

THE MENTAL WELL-BEING OF LEIDEN UNIVERSITY PhD CANDIDATES

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Project team

Dr. Inge van der Weijden, senior researcher, CWTS

Dr. Ingeborg Meijer, senior researcher & research evaluation consultant, CWTS

Ingeborg van der Ven, MSc

Johan-Jan Beukman, MSc

Raïsh Farzand Ali, MSc

Evan de Gelder, BSc, research assistant CWTS

Centre for Science and Technology Studies (CWTS)

Leiden University

P.O. Box 905

2300 AX Leiden, The Netherlands

Tel.   +31 71 527 3909

Fax   +31 71 527 3911

E-mail i.c.m.van.der.weijden@cwts.leidenuniv.nl

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Rationale

The Belgian research institute ECOOM (https://www.ecoom.be/) has conducted research into the link between the academic working environment and the (mental) well-being of PhD candidates at Flemish universities (*Levecque et al., 2016 & 2017*). The results of this research show that young researchers are more likely to develop mental problems than the regular working population in Flanders educated to a similar level of higher professional education and above (HBO+). In the Netherlands, the UvA-Pro PhD Council has also conducted research into the mental well-being of PhD candidates at the University of Amsterdam (UvA). This reveals some remarkable figures: 36.5% of the PhD candidates questioned may be suffering from depression (*van Ewijk, 2016*). These results provided the rationale for further research into the mental well-being of PhD candidates at Leiden University. From a policy perspective, the findings are interesting because an understanding of employees' mental state can provide useful indications in the effort to achieve balanced employees. Various studies (e.g *Graduate Student Happiness & Well-Being Report, 2014*) have already clearly demonstrated that balanced – i.e. healthy – employees are happier, more productive, more resilient and more cooperative. A focus on the mental state of PhD candidates is also of relevance in terms of the Netherlands' development as a knowledge economy. PhD candidates are regarded as a key component of the knowledge economy (*VSNU, 2008*). According to the Association of Universities in the Netherlands (VSNU), PhD candidates are 'the promise for the future'. Finally, this research is of relevance because it offers useful empirical material for comparing candidates' mental health with that of other PhD candidates, both in the Netherlands and internationally.

Approach

In the period from October to December 2016, a questionnaire was distributed among PhD candidates at Leiden University. Assistance in distributing the questionnaire was provided by the platform that represents Leiden University PhD candidates (*Leidse Promovendi Overleg*, LEO - *http://www.leoleiden.nl/).* The questionnaire included questions covering areas as PhD candidates' contractual situation, tasks, autonomy, supervision, leadership and career opportunities. There were also questions about work-life balance, workload (and dealing with it) and well-being. The questions corresponded with those previously used by ECOOM in its

Survey of Junior Researchers (SJR) (*ECOOM, 2013*). All of these questions were based on validated concepts. The wording was adjusted to suit the Dutch context. The SJR questionnaire also included the General Health Questionnaire (GHQ, see below). A total of 250 Leiden PhD candidates completed the questionnaire. This can be considered to be a good response since the total number of PhD candidates at Leiden University in 2015 was 767 (*Leiden University, 2016*). Of the respondents, 60% are women, 42% non-Dutch and 27% do not have a contract of employment with Leiden University. The average age of the PhD candidates is 33 years and all faculties were represented (see Table 1). The results of the various questions were calculated using SPSS and multivariate logistic regression analysis. In calculating the predictive value of the various factors, the GHQ4+ was taken as a single value. In addition, in February-March 2017, twelve interviews were conducted with PhD candidates who had indicated their willingness to be interviewed. The interviewees were evenly distributed across the faculties and efforts were made to achieve a male/female balance. International PhD candidates also participated in the interviews.

	Characteristics of survey respondents **250 Leiden University PhD candidates**
Gender	149 (60%) women 100 (40%) men
Average age	Average of 33 years
Nationality	144 (58%) Dutch 106 (42%) non-Dutch (international PhD candidates)
Leiden University employment contract	176 (70%) employment contract 67 (27%) no employment contract 7 (3%) unknown
Field/Discipline	75 (30%) Humanities 67 (27%) Social & Behavioural Sciences 57 (23%) Sciences 42 (17%) Biomedical Sciences 9 (3%) Applied Sciences

Table 1: Characteristics of survey respondents

The General Health Questionnaire GHQ

According to figures from the World Health Organization, 300 million people worldwide struggle with depression *(WHO, 2017).* Mental health problems are problematic because they prevent people from fulfilling their potential and making a useful contribution to the community (*Leveque et al., 2015*). Mental problems in the academic world are difficult to perceive. Because of the stigma associated with mental illness, PhD candidates may be reluctant to discuss these problems with those around them, and especially with their PhD supervisors *(Sohn, 2016).* The General Health Questionnaire (GCQ) can provide insight into mental health. The GHQ is a validated screening instrument for identifying psychological distress and the risk of a common psychiatric disorder. It is the most frequently-used mental health questionnaire worldwide. In common with ECOOM (*Levecque et al., 2016 & 2017*), we use the GHQ-12, which explores the extent to which someone has experienced specific symptoms more than usual in the previous weeks. The twelve symptoms are listed in Table 2. Most symbols are an indication of depression and social dysfunction. The GHQ method considers a symptom to be "present" if that symptom has been experienced (much) more than usual in the previous weeks. Four or more symptoms (GHQ4+) indicate the risk of a common psychiatric disorder and possible depression. The GHQ is *not* used to establish whether someone has a common psychiatric disorder: a diagnosis of that kind requires a medical consultation.

Mental state of Leiden University PhD candidates

Table 2 shows the results for the GHQ12 questions and compares them to the ECOOM results that itself compared the five Flemish universities with a random sample of the highly-educated Flemish population. Only fully-completed GHQ12 questionnaires (n=235) were included in the analysis. As in Flanders, Leiden University PhD candidates have more problems with their mental well-being than a comparable group of highly-educated people. In Leiden, the figures are even worse than in Flanders: ***38.3% of the PhD candidates scored GHQ4+,*** which means that for 4 or more of the 12 GHQ questions, they had (much) more of a problem. That 38.3% implies that 90 of the 235 Leiden University PhD candidates currently run the risk of serious mental health problems. The table also shows that around half (47%) of Leiden University PhD candidates surveyed felt under constant pressure. A third feel more unhappy/depressed than average (33%). Slightly less than one third suffer

lost sleep over worry (32%), cannot overcome difficulties (32%) and suffer concentration problems more than the average (31%). The Leiden University PhD candidates scored higher than their Flemish counterparts on all twelve GHQ12 questions and much higher than the highly-educated Flemish population. An exception is the question of feeling worthless, for which Flanders scored a bit higher.

	Leiden University PhD candidates	PhD candidates in Flanders	Highly educated in Flanders
	%	%	%
GHQ4+ / risk group	**38.3**	**31.8**	**14.0**
Well-being indicators (GHQ-12)			
Tension, feeling under constant pressure	46.8	40.8	27.2
Unhappy or depressed	32.8	30.3	13.7
Lack of sleep	32.8	28.3	18.1
Unable to overcome difficulties	31.5	26.1	10.7
Concentration problems	29.8	21.7	11.8
Not enjoying normal day-to-day activities	26.4	25.4	13.0
Lack of self-confidence	26.4	24.3	8.1
Not feeling happy	23.0	21.2	11.3
Sense of not playing a useful role	22.6	22.5	9.0
Difficulty in making important decisions	22.1	15.0	6.0
Not able to face problems	18.3	13.4	4.4
Feeling of worthlessness	14.0	16.2	5.4

Table 2: Mental well-being of Leiden University PhD candidates

Factors that influence mental well-being

According to the Graduate Student Happiness & Well-Being Report *(2014)*, the top ten predictors of graduate student well-being are: career prospects, general health, living conditions, academic engagement, social support, financial confidence, academic progress, sleep, feeling valued and included, and the relationship with supervisors. Other factors frequently cited include workload, dealing with workload, work-life balance, and autonomy, i.e. the extent to which one is able to determine how to organizes one's work. The SJR questionnaire asked about all of these factors, making it possible to determine whether they contribute to mental well-being and, if so, whether that contribution is significant. The factors can be divided into descriptive factors, personal factors and factors concerning supervision. Two separate multivariate logistic regressions result in the following findings (see Table 3-5); these are discussed below.

1. Descriptive factors in relation to GHQ4+

These factors concern descriptions of the group of PhD candidates as a whole, the distribution across faculties and career prospects in the academic system.

Age: the average age of respondents in the GHQ4+ risk group is 30, three years younger than the average age (Table 3). Age is a significant predictor for the development of mental health problems. ***The younger the PhD candidate, the greater the risk.***

Gender: both the total group of respondents and the GHQ4+ risk group are made up of more than 60% women (Table 3). Gender is not a predictor of mental health problems (Table 3). ***Men and women respond to GHQ12 questions in a similar way.***

Nationality: there are many international PhD candidates working at Leiden University. They are well represented (42%) in the response to the questionnaire (which was distributed in both Dutch and English). ***The large group of international PhD candidates experience more mental health problems than average***: international PhD candidates account for 57% of the GHQ4+ risk group (Table 3), but only 42% of the total group of respondents.

Employment contract: a total of 70% of the PhD candidates have an employment contract. ***The security of an employment contract does not protect against***

mental health problems, because 76% of the GHQ4+ risk group have contracts (Table 3).

Academic field: **the likelihood of mental health problems is slightly higher in Sciences and the Humanities.** In both cases, the percentage in the GHQ4+ risk group is slightly higher than in the whole group of respondents (Table 3).

Career opportunities in academia: **in the GHQ4+ risk group, there is a more negative view about career opportunities in academia** (average of 2.9 compared to 3.5 on a five-point scale). With a confidence interval of 90%, a negative view on career opportunities in academia is a significant predictor of mental health problems among PhD candidates (Table 4). This judgement is not associated with a negative view of the quality of HRM and the University's career policy (Table 4).

	90 GHQ4+ respondents
Gender	58 (64%) women 32 (36%) men
Average age	Average age of 30
Nationality	39 (43%) Dutch 51 (57%) non-Dutch
Leiden University employment contract	68 (76%) employment contract 21 (23 %) no employment contract 1 (1%) unknown
Field	32 (36%) Humanities 18 (20%) Social & Behavioural Sciences 25 (28%) Sciences 13 (14%) Biomedical Sciences 2 (2%) Applied Sciences

Table 3. Descriptive factors of the 90 GHQ4+ respondents (who are in the risk group)

2. Personal factors in relation to GHQ4+

Personal factors are those relating to the individual person. Of course, differences in character and personality are also of relevance, but are not part of this research.

Workload: this is too high if the demands placed on the employee do not match the amount of work a person is capable of achieving. The questions in the survey on this

topic primarily concerned the pace and quantity of work. Workload is not an isolated factor but relates to other factors, such as autonomy, pressure to perform and social support. According to the multivariate logistic analysis (Table 4), *workload is not a significant predictor of mental health problems*.

Dealing with workload: the questions relating to this topic concern problems with the pace of work and the amount of it. In other words, it is not about the amount of work, but one's ability to deal with the pressure. *Dealing with workload is a significant predictor of mental health problems* (Table 4).

Work-life balance: this is defined as the extent to which a person is as satisfied with his or her work as with family life *(Greenhaus, Collins, Shaw, 2003)*. Problems can arise in this area if there is a conflict between the demands of work and those of the family. *Work-life balance is not a significant predictor of mental health problems* (Table 4).

Autonomy: the degree of autonomy indicates the extent to which the PhD candidate has the opportunity to determine independently how his or her work is scheduled and completed. *Autonomy is not a significant predictor of mental health problems (*Table 4).

Feeling of competence: during their PhD programme, PhD candidates attempt to develop an impression of themselves as a competent researcher. The aim is to start considering themselves as an essential and valued part of the academic community *(Stubb, Pyhältö & Lonka, 2011)*. The feeling of competence experienced by PhD candidates has been made measurable by means of the question of whether they are proud of the work that they do. It is assumed that autonomy and a feeling of competence have a mitigating effect on mental well-being. However, *in this study, a low feeling of competence is a significant predictor of mental health problems*. Of the GHQ4+ risk group, 67% have little pride in the work that they do (Table 5).

Quitting the PhD: finally, we asked PhD candidates whether they had considered quitting their PhD and, if so, how often (Table 5). It shows that *PhD candidates in the GHQ4+ risk group consider quitting their PhD significantly more often.* Of this group, 53% regularly consider quitting, whereas 28% of the risk group never consider this.

Variables in relation to GHQ4+	B	Significance
Workload	.471	.154
Problems with workload	1.313	.000
Autonomy	-.158	.640
Work-life balance	-.222	.237
Satisfaction with the supervisor's supervision	.226	.082
Satisfaction with quality of HRM/University's career policy	.175	.327
Career opportunities in the academic sector	.240	.077
Gender (female)	.107	.741
Nationality (non-Dutch)	1.250	.000

Table 4: Personal variables in relation to GHQ4+

3. Leadership variables in relation to GHQ4+

The supervisor or co-supervisor plays an important role in the life of a PhD candidate. He or she is responsible for supporting the PhD candidate during the PhD programme and guiding him or her towards a successful defence of the PhD. The relationship between the supervisor and the PhD candidate is therefore crucial for the successful completion of the PhD programme. The supervisor's leadership style plays a role in this. Leadership is seen as a complex mixture of personal and behavioural factors. Essentially, it is about emphasizing vision, inspiring loyalty and forging an emotional connection. In addition to questions about satisfaction and support, the questionnaire also uses validated instruments to measure leadership. These are the *Leadership Member Exchange* (LMX; *Graen & Uhl-Bien, 1995*) and *Charismatic Leadership in Organizations* (CliO; *de Hoogh, 2014*).

Satisfaction with the supervisor's supervision: with a confidence interval of 90%, a ***negative view on satisfaction with the supervisor is a significant predictor of mental health problems among PhD candidates*** (Table 4). A total of 54% of the GHQ4+ risk group expressed dissatisfaction with the supervisor's supervision.

Social support of supervisor: social support is of equal importance in the relationship between the supervisor and PhD candidates. This concerns the amount of support provided by colleagues, the supervisor or both. Research shows that a lack of social support is experienced by academic staff as a major source of stress (e.g *Gillespie et*

al., 2001; Biron, Brun & Ivers, 2008). **It appears that lack of social support** (Table 5) **has a significant (90% confidence) influence on the mental well-being of PhD candidates.** In the GHQ4+ risk group, 60% do not experience sufficient support.

Charismatic leadership (according to CliO and LMX, see Table 5) **is not a predictor of the presence or not of mental well-being.**

Variables in relation to GHQ4+	B	Significance
Age	.055	.038
Considering stopping PhD	1.051	.000
Feeling of competence (PhD candidates)	-,104	.047
Social support of supervisor	.554	.093
Charismatic leadership (CliO)	-1.089	.474
Charismatic leadership (LMX)	-2.120	.218

Table 5: Leadership variables in relation to GHQ4+

Conclusions on mental well-being and the factors that influence it

The brief discussion of the findings below also includes information from the interviews. *The results of the questionnaire reveal that 38% of the Leiden University PhD candidates surveyed are at risk of serious mental health problems.* This applies in particular to *young* and *international PhD candidates*. It is reasonable to assume that international PhD candidates face a similar situation to international students when they arrive in a "new" country. Adjusting to a new social environment is a stressful process. For example, international candidates have to deal with the language barrier, immigration problems, a culture shock, social adaptation and homesickness *(Sümer et al., 2008).* This period of adaptation can be associated with feelings of loneliness. In view of the cultural differences, according to Adler *(1975)*, it is reasonable to assume that cultural differences lead to feelings of anxiety and depression during the process of adaptation. This research does indeed reveal that this group experiences greater mental health problems than Dutch PhD candidates.

Our results suggest that PhD candidates in the Humanities, where success depends less directly on the number of publications, suffer slightly more from mental health

problems. Although there is also pressure to publish in other faculties, there is greater clarity with regard to what publications are required.

Having an employment contract has no influence on mental well-being. *The more integrated within the university structure, especially in the case of young PhD candidates, and therefore also the more dependent on the academic system, the greater the likelihood of mental health problems, particularly if it is not clear what requirements need to be met or if there seems to be little prospect of an academic career.* In such situations, PhD candidates can feel incompetent if they are not offered sufficient support and supervision. It is often unclear whether they have achieved the required standard. At the same time, PhD candidates made positive comments in the interviews about the chance to conduct research and the opportunity to complete a PhD; it is generally a carefully-considered choice. This calls on the University as employer, and the supervisors as those directly supervising the process, to ensure that they make sufficient effort and engage in an open dialogue in order to enable PhD trajectories to be successfully completed.

No one denies that conducting PhD research is a stressful period. The workload is felt to be considerable, as clearly also emerges in the interviews with PhD candidates. But this kind of pressure is not a significant predictor of mental health problems among PhD candidates. They are fully aware that the amount of work they need to do is considerable and that this will be at the expense of their work-life balance, at least temporarily. Many PhD candidates take very little time off; holidays are short and work often continues into the evenings and weekends. *However, when PhD candidates encounter real problems in dealing with the amount and pace of work, mental health problems can arise.* The interviews reveal that this may be associated with teaching duties that take up time that is not offset in other ways. Autonomy at work, often seen as a mitigating factor for stress, does not have that effect for PhD candidates. This may be because PhD candidates always consider their PhD trajectory to be a generally autonomous process for which they are themselves responsible.

As indicated by Levecque et al. (2016; 2017), this is the first study that enables a direct comparison between countries. The findings in Flanders would suggest a problem of similar magnitude, albeit with different predictive factors than at Leiden University.

Policy solutions suggested by PhD candidates and the research team

In response to Parliamentary questions from the Dutch Socialist Party about the pressure of work in academia, Jet Bussemaker, outgoing Minister of Education, Culture and Science, said on 2 June 2017 that it is up to the University as the employer to seek solutions for pressure at work: "*The workload experienced is a consequence of the conditions of employment created by the employer and the employer also bears responsibility for improving these conditions*" (p. 2)… "*I see it as the responsibility of the institutions to develop proposals to reduce workload among their employees*" (p. 3).

For these proposals, Leiden University can make use of the suggestions made in the interviews and of the research team's expertise. We would suggest the following:

- Appointing an independent psychologist especially for PhD candidates (cf. TU Delft);

- Establishing a supervision team for international PhD candidates;

- Career coaching for both non-academic and academic careers, including the development of transferable skills;

- Supervisor training (cf. TU Delft) for both new and experienced supervisors, including a focus on identifying mental health problems and cross-cultural communication;

- Transparency with regard to the requirements PhD candidates must meet;

- Independent PhD mentoring groups, in which dealing with workload and work-life balance can be discussed;

- Frequent monitoring of the well-being of Leiden University PhD candidates and evaluation of chosen interventions with the help of questionnaires, focus groups and interviews.

However, without a critical reflection of the competitive and individualistic academic culture, these proposals are unlikely to bring about any concrete changes.

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