

# Well-being Survey 2022

Aspects of PhD students' well-being at the  
University of Groningen and University Medical Center Groningen

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## Preface

Welcome to the third edition of the University of Groningen's comprehensive survey on the well-being of our PhD students. This instalment arrives against the backdrop of a profound global event that has reshaped our academic landscape—the COVID-19 pandemic. This survey not only continues our commitment to understanding the well-being of our doctoral candidates but also provides valuable insights into the impact of an unprecedented global crisis on their academic journeys.

Concerning well-being, the journey of a PhD student is characterized by dedication, perseverance, and resilience in the pursuit of knowledge. Moments of self-doubt and of despair in the case of instrument or software failure alternate with moments of great satisfaction and happiness with the results obtained and the recognition of the scientific community. However, the last couple of years have been particularly challenging due to the disruptions caused by the COVID-19 pandemic. Laboratories shuttered, face-to-face interactions dwindled, and the academic landscape transformed in ways previously unforeseen. It is hardly surprising that many of our talented young researchers have encountered setbacks, as their work was impacted by the pandemic's aftermath. What might come as a surprise, however, is the pervasive sense of disconnection reported by many PhD students from their research groups and academic communities. Despite the advancements in digital connectivity, the isolation stemming from the lack of in-person interactions has left its mark. In response, it is imperative that we initiate measures to bridge this gap. Graduate Schools, taking a proactive role, must emphasize this aspect in their interactions with PhD supervisors. Encouraging group events, outings, and fostering a sense of community are vital steps in favouring a sense of belonging. These values are also embedded in our new training initiatives for supervisors that also aim at teaching how to modify the way of supervising throughout the PhD journey. This collective effort will ideally lead to improved supervision for PhD students, contributing to their overall well-being and diminishing the discrepancy in perceived mental health between junior and senior PhD students.

The report further highlights that our doctoral candidates perceive a healthy work-life balance, yet an area requiring focus pertains to stress arising from excessive working hours. Here too, fostering awareness among supervisors is essential. Additionally, a noteworthy outcome of the survey is that a third of our PhD students expresses serious concerns about their career prospects and future. This finding is intriguing, considering that historically, unemployment rates for PhD holders across Europe have been notably low. We acknowledge this apprehension and remain dedicated to enhancing career development support and opportunities for the aspired professional future of our young researchers.

Amidst these challenges, the survey does reveal positive outcomes. Once more our PhD students report satisfaction with the quality of supervision they receive and with the PhD programme. They are well-informed about the courses offered through the Career Perspectives Series, designed to prepare them for life beyond their doctorate. Equally encouraging is their awareness of the PhD support activities in place, providing assistance and prevention strategies for stress and mental health challenges.

I extend my deepest gratitude to all doctoral candidates who participated in this survey, as your voices contribute to a collective endeavour to foster a thriving academic environment. I am very thankful to Marjon Fokkens-Bruinsma and Irene Poort for once more designing a very informative survey, analysing the results, formulating the conclusions, and writing this very insightful report.

Prof. Petra Rudolf, Dean of Graduate Studies

## Management Summary

At the end of June 2022, the Well-being Survey was sent to all PhD students at the UG/UMCG as part of the 'Succesvol Promoveren' research project. The main aim of this well-being study was to gain more insight into the prevalence of mental health-related problems among PhD students. A total of 554 PhD students completed the survey. The main results are summarized in this section. For more detailed information, we refer to the full report and the appendix.

### Progress and satisfaction

Almost half of the PhD students indicated that they had fallen behind schedule. On average, PhD students were confident that they would finish their PhD, but their confidence in being able to finish within the time of their contract (*i.e.* submit the thesis to the Assessment Committee before the end of the contract) was lower. On average, PhD students were satisfied with their PhD trajectory overall and with their supervision, although, similar to the results reported in 2020, they rated the workload and the complexity of their project as high. The PhD students were reasonably confident that they would be able to find a suitable and interesting job after completing their PhD. PhD students indicated that they were rather satisfied with the meetings with their supervisors. Finally, PhD students reported an average work atmosphere within the department; in general, these findings are comparable to those that were reported in the 2020 survey.

### Impact of the COVID-19 pandemic

PhD students were asked to indicate how COVID-19 had impacted their ability to engage in certain aspects of the PhD project. In general PhD students reported a negative effect of the pandemic rather than a positive effect; this concerned discussing ideas and findings with colleagues and peers in particular. PhD students were somewhat more positive on the ability to engage in writing and data analysis, as well as on the future career prospects. When asked about more specific aspects related to PhD students' well-being we found that almost a third felt overwhelmed in a bigger group of people, and did not feel a sense of belonging to the research group as a result of the pandemic.

### Mental health

Mental health was measured using the WHO scale, which ranges from 0-100. The PhD students scored slightly below the midpoint of this scale indicating a lower mental health. The General Health Questionnaire PhD students scored above the cut-off score of 12, which is to be considered a case for concern. The PhD students also rated their average mental health during the PhD trajectory, on a scale of 1 to 10. Their average current mental health was 6.49, which was much higher than their reported mental health during the COVID-19 pandemic (5.53). Despite this, PhD students were most positive about their health during the Bachelor's/Master's. PhD students scored a 6.60 on the happiness scale (0-10), where lower scores indicate lower levels of happiness. PhD students finally scored just above the midscale point for resilience, which is in fact lower than the scores that were found in previous studies. A quarter of the PhD students indicated that doing a PhD affected their mental health negatively. This concerned aspects such as insecurities about own capabilities, a high workload, problems with work-life balance, not being able to finish in time or doubts about being able to finish in time, not achieving good results or doubts about achieving good results, procrastination/lack of motivation. Next to that, PhD students also indicated which aspects positively affected their mental health. These concerned aspects related to interest, positive relationships with colleagues and peers as well as with supervisors. PhD students also indicated the opportunity to develop personally and gain professional skills.

Burnout is often measured by levels of exhaustion, cynicism, and professional efficacy (where low efficacy is an indicator of burnout). The mean scores for exhaustion and cynicism were slightly below the scale midpoint. At the same time PhD students scored far above the scale midpoints for

professional efficacy. Work engagement can be measured by vigour and dedication. The PhD students' mean score on vigour was at the scale-midpoint, for dedication however the score was above the scale-midpoint.

We asked PhD students whether they worry about their career and if so what they worried about. These career worries seem to be quite common: 39% of the PhD students sometimes worry about their career and 33% worries about it often or all of the time. In particular they worry about aspects such as the high competition to obtain the job they want, not knowing what kind of career they want and being unsure whether they are good enough for the kind of job they want.

There were several significant relationships between the mental health indicators and aspects of satisfaction and progress. For example, GHQ-12 was moderately related to satisfaction with the PhD trajectory overall, satisfaction with performance within the PhD, satisfaction with supervision, and having considered quitting the PhD project. The aspects of burnout – exhaustion, cynicism, and professional efficacy – and of work engagement – vigour and dedication – were moderately to strongly related to satisfaction with the PhD trajectory overall, satisfaction with performance within the PhD, satisfaction with supervision, and having considered quitting the PhD project. Mental health, measured by the WHO and GHQ-12, had a moderate relationship with resilience and moderate to strong relationships with all aspects of burnout and work engagement in the expected direction.

### **Mental health support at the UG and UMCG**

PhD students would like to be able to talk to someone at the UG/UMCG if they were to experience mental health problems. Comparably to the 2020 survey, the majority of PhD students in the 2022 survey tended to know whom to turn to in such an instance, however, this still leaves a group of PhD students who do not know whom to turn to. Similarly to the 2020 survey, PhD students were more likely to talk to their daily supervisor than to their primary supervisor if they experienced mental health problems. Both supervisors scored high on the PhD students' expectation regarding supportive behaviour in case they would share their mental health problems.

PhD students were most aware of the courses and workshops offered through PhD support and the Career Perspectives series (close to 90%). Overall the visibility of PhD student mental health support stayed the same between 2020 and 2022.

The PhD students who experienced mental health problems in the past or who are experiencing them currently (in total more than half of the respondents) were asked whom they talked to about their problems. Most often, the supervisor or colleagues were mentioned. When asked how helpful it was to talk to someone, more than 80% found this somewhat to extremely helpful.

### **Lifestyle characteristics**

Of the respondents, 65% reported not being involved in a structural activity in addition to their PhD project. Half of the PhD students work more hours than their contract requires, with an average score of 13 hours extra per week. More than half of the PhD students who work more, experience stress related to working overtime. 75% of the PhD students generally take vacation/leave days. When looking at the respondent's work-life balance we see that all scores are around the scale midpoint, which indicates that PhD students generally do not experience a healthy work-life balance.

### **Differences**

We examined differences based on gender, nationality, graduate school, type of contract, and phase of the PhD project. Only a few gender-based differences were found. More differences were found based on nationality, graduate school, and type of contract. For nationality there was not a clear trend. However, for graduate schools a clear trend emerged. GSSE PhD students tended to have a more

negative experience related to progress and satisfaction with the PhD trajectory and scored more negatively on mental health indicators. GSBSS PhD students tend to score more positively on mental health indicators and work-life balance. Regarding type of contract, there were not many differences between the groups. In case of differences, externally financed PhD students scored higher with the exception of work-atmosphere in the department, which was rated more positively by those employed as a PhD student by the UG/UMCG. The most consistent differences were found based on phase of the project. Junior PhD students score more positively on satisfaction with supervision and PhD trajectory, mental health indicators, and work-life balance.

### Concluding remarks

The results of the 2022 survey show many similarities with the 2020 survey. PhD students still rate their current well-being as being worse than during their Bachelor's and Master's studies. However, PhD students are more positive about their well-being in 2022 during the COVID-19 pandemic. The PhD students indicated that the COVID-19 pandemic had a small negative effect on their mental health, and that the pandemic affected their PhD trajectory, for example in terms of having fewer supervisory meetings or less contact with other PhD students.

Similarly to the 2020 survey, PhD students in 2022 still tend to work over-time. On top of that, they indicated that they find it hard to maintain a healthy work-life balance. In 2022, the results pointed to a few groups that need more consideration, namely PhD students who work at the GSSE and those in the second half of their trajectory.

The 2022 survey included a considerably larger number of open questions related to aspects such as improving the PhD trajectory and social safety. For both of them PhD students listed the following aspects as being of importance:

- Improving the quality of supervision, both related to the PhD process and to issues of social safety.
- Enhancing sense of belonging and creating a stronger sense of community.
- Raising awareness concerning mental health and social safety aspects.

## Introduction

The ‘Succesvol Promoveren’ research project started in early 2017. The aims of this project were to investigate factors that are related to PhD students’ timely and successful completion of their PhD thesis at the UG/UMCG. By gaining insight into these factors, PhD education can be improved. One part of this project focused specifically on PhD students’ well-being. This is a topic that has become more pressing in recent years, with different studies showing that many PhD students suffer from mental health problems. As a result, the Well-being Survey was developed and then distributed among PhD students in 2018, and in 2020. In June 2022, the Well-being Survey was distributed again among UG/UMCG PhD students. The main goals of this study were:

1. to gain insight into the prevalence of mental health problems and other work-related problems;
2. to investigate whether and how these problems are related to a number of background factors: gender, nationality, graduate school, type of contract (*e.g.*, employed as a PhD student by UG/UMCG, scholarship from UG/UMCG, externally financed PhD student), and phase of the project (*i.e.*, first two years or last two years);
3. to find out how and to what extent mental health is related to a PhD student’s progress and satisfaction;
4. to gain insight into PhD students’ use and appreciation of the support that is currently offered by the UG/UMCG;
5. to gain insight in the influence of the COVID-19 pandemic on the mental well-being of PhD students and their PhD project.

The survey addressed the following topics:

1. Progress and satisfaction
2. Impact of the COVID-19 pandemic
3. Mental health
4. Support at the UG/UMCG
5. Burnout and work engagement
6. Resilience
7. Sociodemographic and lifestyle questions
8. Background characteristics

The Well-being Survey was sent to all PhD students from the UG/UMCG *via* an email from the Groningen Graduate Schools (using Qualtrics mailing system), in which the goal of the survey was explained. It was emphasized that the survey was meant for all PhD students, and words such as ‘problems’ were avoided to decrease the response bias towards PhD students who did not feel well mentally. Besides the initial invitation and reminder that was sent through Qualtrics, PhD students were approached through other avenues (such as individual graduate schools) as well in order to motivate them to participate. By the end of August 2022, the survey was closed. Participation in the survey was voluntary and anonymity was guaranteed. Respondents were free to withdraw from the survey at any time.

In the present report, we focus on the most important results for all topics. First the background characteristics are described in ‘Sample description’ (section 1). Sections 2-7 present the results for the different topics regarding/considering the total sample of PhD students. Section 8 summarizes the main differences between groups. Tables that show the group differences in more detail are presented in the appendix.

To ensure PhD students’ anonymity, the results are only presented at the group level, and statistical analysis of small groups ( $n < 30$ ) are not presented at all.

## Sample Description

The total sample consisted of 729 PhD students (which equals a response percentage of 19%), of which 554 completed at least two thirds of the survey and indicated that their data could be used for improvement purposes. The background questions for the sample description were in the final part of the survey and were therefore not completed by all 554 respondents. As Table 1 shows, over 61% of the respondents were female. This is comparable to the number of female respondents in the 2020 survey (57% female respondents).

Table 1. Gender - number and percentage of respondents' gender

	Number	Percentage
Female	337	61.4
Male	200	36.4
Other / prefer not to say	12	2.2
Total	549	100

Table 2 shows the distribution of respondents' nationalities. About 45% of the respondents were Dutch, 21% were non-Dutch European, 34% had another nationality. This is comparable to the respondents in 2020: 45%, 22% and 30% respectively.

Table 2. Nationality - number and percentage of respondents' nationality

	Number	Percentage
Dutch	245	44.5
Nationality from EEA country (non-Dutch)	113	20.5
Other nationality	184	33.5
Prefer not to say	8	1.5
Total	550	100

*Note: groups marked green contain more than 30 respondents and are used to investigate possible differences based on nationality.*

Table 3 shows the number and percentage of respondents by graduate school. Beside that, the table shows the response percentage per graduate school. Most of the PhD students were part of the Graduate School of Medical Sciences (30%), followed by the Graduate School of Science and Engineering (28%), and the Graduate School of Behavioural and Social Sciences (14%). The remaining 28% were part of the Graduate School for the Humanities, the Graduate School of Economics and Business, the Graduate School of Spatial Sciences, the Graduate School of Campus Fryslân, the Graduate School of Law, the Graduate School of Theology and Religious Studies, the Graduate School of Philosophy, or 'preferred not to say'. Compared to the 2020 data, the number of respondents at the Graduate School of Science and Engineering decreased by 12%, while the number increased by 4% at the Graduate School of Behavioural and Social Sciences. The other Graduate Schools showed a very small increase.

The highest response percentages can be found for the Graduate School of Behavioural and Social Sciences and Campus Fryslân, the lowest response percentages for the Graduate School of Medical Sciences and the Graduate School of Law.



Table 3. Graduate School - number and percentage of respondents from each graduate school

	Number	Percentage	Response percentage
GSBSS	77	14.0	28.4
GSCF	14	2.5	28.8
GSEB	27	4.9	17.5
GSH	47	8.5	17.0
GSL	14	2.5	10.8
GSMS	165	30.0	10.5
GSP	7	1.3	16.3
GSSE	153	27.8	12.3
GSSS	20	3.6	19.0
GSTRS	12	2.2	21.4
Don't know / prefer not to say	14	2.6	-
Total	550	100	

Note: groups marked green contain more than 30 respondents and are used to investigate possible differences based on the graduate school.

Acronyms: GSBSS = Graduate School of Behavioural and Social Sciences, GSCF = Graduate School of Campus Fryslân, GSEB = Graduate School of Economics and Business, GSH = Graduate School of Humanities, GSL = Graduate School of Law, GSMS = Graduate School of Medical Sciences, GSP = Graduate School of Philosophy, GSSE = Graduate School of Science and Engineering, GSSS = Graduate School of Spatial Sciences, GSTRS = Graduate School of Theology and Religious Sciences

We asked the PhD students what type of contract they had. Table 4 shows that half of the respondents (52%) were employed as a PhD student by the UG/UMCG, while 30% were scholarship student (promotiestudent) at the UG/UMCG, 6% were externally financed PhD students<sup>1</sup>, 3% were medical doctor MD/PhD students at the UMCG, and 3% had ended their contract/scholarship at the UG/UMCG and were completing their PhD in their own time. We recoded the 'other' category into the main categories where possible. The remaining other types of contracts were mainly a combination of different contracts, a sandwich position, external PhD students who do not get paid for their PhD research or unable to classify. These numbers are comparable with 2020.

Table 4. Type of contract - number and percentage of respondents per type of contract

	Number	Percentage
Employed as a PhD student by UG/UMCG	283	51.5
Externally financed PhD student	35	6.4
Scholarship student at the UG/UMCG	164	29.8
MD/PhD at UMCG	17	3.1
End of contract/scholarship at the UG/UMCG and finishing PhD in own time	15	2.7
Other	31	5.6
Don't know/Prefer not to say	5	0.9
Total	550	100

Note: groups marked green contain more than 30 respondents and are used to investigate possible differences based on the respondents' contract.

The distribution of the respondents' allotted time for their PhD projects is shown in Table 5. This table shows that 73% of PhD students planned 4 years for their project, 7% expected more than 4 years, 10% planned 3 years, and 4% planned less than 3 years. These percentages are comparable to those found in the 2020 survey.

<sup>1</sup> These are PhD students who have a contract with an external institution/organization that allows them to spend part of their working hours on the PhD trajectory.

Table 5. Allotted time - number and percentage of allotted time period for the PhD project

	Number	Percentage
< 3 years	24	4.4
3 years	54	9.8
4 years	399	72.7
> 4 years	38	6.9
Other <sup>1</sup>	20	3.6
Don't know / no contract	14	2.6
Total	549	100

<sup>1</sup> Change in contract, open-end contract, prolongation, variations of contracts between 2-7 years, not defined.

Table 6 shows that 82% of the PhD students work full-time on their project, while 11% work fewer than 36 hours per week, and 8% have a different system. This distribution is similar to the 2020 data.

Table 6. Number and percentage of respondents working full-time or part-time

	Number	Percentage
Full-time	400	82.0
Part-time (<36 hours)	51	10.5
Other <sup>1</sup> / don't know	37	7.6
Missing	66	11.9
Total	488	100

<sup>1</sup> E.g. change of hours during PhD-project, scholarship, no salary

Table 7 shows that the respondents were almost equally distributed over the first year (31%), second year (21%), and third year (21%). The remaining 26% were either in their fourth year (17%), fifth year (6%), or more (3%). This distribution resembles that of the respondents in the 2020 survey, with the exception that this year the percentage of first year PhD students is higher.

Table 7. Year of PhD - number and percentage of respondents per current year of PhD

	Number	Percentage
First year	171	31.3
Second year	117	21.4
Third year	116	21.2
Fourth year	95	17.4
Fifth year	31	5.7
Over five years	17	3.1
Total	547	100

Table 7.1. Phase of the project - number and percentage of respondents per phase of the project

	Number	Percentage
Junior	288	52.7
Senior	259	47.3
Total	547	100

## Progress and Satisfaction

### Satisfaction with performance, project characteristics, and confidence

The PhD students were asked some general questions about their self-perceived progress in their PhD project, their confidence in being able to finish on time, and their satisfaction (see Table 8). PhD students' own satisfaction with their performance is lower than their supervisors' satisfaction, while the PhD students rated the workload and complexity quite high. PhD students indicated that they know what supervisors expect of them. Furthermore, the PhD students are generally confident that they will finish their thesis, even though their confidence in being able to submit their thesis to the assessment committee before the end of their contract is a little lower. Their confidence in finding an interesting and suitable job after their PhD is above the scale mid-point. The results are comparable with the data from 2020 with scores being the same or just a little bit higher. The biggest increase pertained to PhD students being confident that they will be able to submit their thesis before the end of their contract.

Table 8. Satisfaction - mean and standard deviation (SD) showing the respondents' satisfaction with performance, project characteristics, and confidence

	Mean (SD)
Overall, I am satisfied with how I am performing in my PhD	3.47 (1.00)
Overall, my primary supervisor (promotor) is satisfied with how I am performing	4.00 (0.71)
Overall, my daily supervisor is satisfied with how I am performing	3.99 (0.75)
Overall, I know what my supervisors expect of me	3.75 (0.92)
The workload in my PhD is high	3.86 (0.91)
The complexity of my PhD is high	4.02 (0.81)
I am confident that I will, eventually, finish my PhD	4.23 (0.81)
I am confident that I will be able to submit my thesis to the assessment committee before the end of my contract	3.14 (1.27)
I am confident that I will find a suitable and interesting job after I have finished my PhD	3.71 (1.06)

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).

### Progress, considering quitting, and satisfaction with the trajectory and supervision

When asked whether they thought they were on schedule or not, 39% of the respondents reported to be on schedule, 23% to have fallen behind but able to finish on time, and 16% to be behind schedule and not able to finish on time. The remaining 22% already had an extension, was completing their thesis in their own time, had completed their thesis, did not have a schedule, or was dealing with uncertainty for various reasons (Table 9). Compared to 2020, the percentage of students who think they will be able to finish their PhD in time had increased with 18%. The percentage of PhD students who have an extension has increased as well.

Table 9. Progress of the PhD students with their thesis - number and percentage of respondents per statement

	Number	Percentage
Yes, I think I will be able to finish my PhD in time	215	38.9
No, I have fallen behind but I still think I can finish in time	126	22.8
No, I have fallen behind and I don't think I will be able to finish in time	90	16.3
I was unable to finish in time and am currently on an extension	36	6.5
I was unable to finish in time and am currently finishing my thesis in my own time	15	2.7
I have already defended my thesis or sent the manuscript to the assessment committee	2	.4
I don't know / other <sup>1</sup>	69	12.4
Total	553	100

<sup>1</sup> (COVID-19) extension granted but is no guarantee for finishing in time, expecting to fall behind due to unrealistic workload, on track now but feeling insecure about being able to finish in time, health issues, not applicable because just started.

Students who were (expecting) to fall behind gave the following reasons: delays in the research process (data collection, limited lab access, redesign of study) due to the COVID-19 pandemic, mental and physical health problems due to the COVID-19 pandemic, going through major life events (such as deaths in family, illness, pregnancy), delays due to dependency on other people/available data, unrealistic expectations/planning of PhD, insufficient supervision (not enough available time, unskilled), lack of support when data collection/analysis were not going according to plan, too many non-research related additional tasks (above PhD trajectory requirements), insufficient facilities (labs, working equipment, office space), personal bad time-management.

PhD students made several suggestions on how to support them with the delay these pertained to extensions, realistic expectations, professionalisation and time for PhD supervisors. They also mentioned more clarity on procedures such as Data Protection Impact Assessment, ethical clearances, sick leave.

Furthermore, few PhD students have considered quitting their thesis. Satisfaction with the PhD trajectory and its supervision are above the scale midpoint (Table 10). These results mirror the 2020 data.

Table 10. Considerations of quitting, and satisfaction with trajectory and supervision

	Mean (SD)
Have you ever considered quitting your PhD project? <sup>1</sup>	3.92 ( 1.31)
How satisfied are you with your PhD trajectory so far? <sup>2</sup>	3.50 (0.92)
How satisfied are you with the supervision you receive? <sup>2</sup>	3.87 (1.03)

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = yes, very often, 5 = no, never),

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Most PhD students met their daily supervisor between once a week and several times a month, while online meetings with their primary supervisor happened between several times and once a month. Moreover, the PhD students seemed to be quite satisfied with their (online) meetings with both daily supervisor and primary supervisor (Table 11). Compared to the data from 2020 the satisfaction with the meetings slightly increased.

Table 11. Frequency and satisfaction with (online) supervision

	Mean (SD)
Frequency of (online) meetings with daily supervisor <sup>1</sup>	2.77 (1.10)
Frequency of (online) meetings with primary supervisor <sup>1</sup>	3.38 (1.12)
Satisfaction meetings with daily supervisor <sup>2</sup>	4.09 (1.02)
Satisfaction meetings with primary supervisor <sup>2</sup>	3.92 (1.05)

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = several times a week; 2 = about once a week; 3 = several times a month; 4 = about once a month; 5 = less than once a month).

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

The PhD students were asked to explain why they were (dis)satisfied with the meetings with their supervisors. Concerning the meetings with their **daily supervisor** PhD students appreciated the following aspects: efficient use of time, supervisor's availability for meetings and questions, supervisor providing guidance to keep them on track with the research, receiving helpful input and constructive feedback which allows them to move forward, room for discussion, feeling supported and instilling confidence, safe environment to freely share ideas and struggles, showing interest in personal matters and wellbeing of PhD student, and helping them with developing an academic profile and network.

Aspects that were considered negative were: lack of guidance in keeping them on track, critical feedback but no help in how to change, too strong of a focus on supervisor’s own work, too little time available because the supervisor is too busy, meetings being cancelled, lack of interest in personal matters and well-being of PhD students, unsupportive attitude, unsafe environment and being treated in a diminutive way, and insufficient expertise in the research topic or methodology. Most of the negative aspects mentioned are the opposite of the positive aspects. Positive and negative aspects of the meetings with the **primary supervisor** were very similar. In addition to that, there was a stronger emphasis on the lack of expertise in the research topic and methodology.

Formal relationships (*e.g.* collaboration, discussions about work, asking for help), informal relationships (*e.g.* interpersonal relationships between colleagues, interest of colleagues in how they are doing) and a sense of belonging were measured with scales based on Meeuwisse *et al.* (2010). On the scale from 1 to 5, a higher score indicates a stronger and more positive sense of (in)formal relationships between colleagues. The PhD students scored just above average for the scales formal relationships, informal relationships, and a sense of belonging in their department (Table 12). This mirrors the data from 2020.

Table 12. Means and standard deviation regarding the atmosphere within the department

	Mean (SD)
Formal relationships	3.39 (0.74)
Informal relationships	3.15 (0.94)
Sense of belonging	3.66 (0.80)

## Impact of Covid-19 Pandemic

This chapter addresses the impact of COVID-19 on students' progression of the PhD project and their wellbeing. These questions were inspired by Vitae<sup>2</sup>, which performed a large study in the United Kingdom on the impact of COVID -19 on doctoral students and early career research staff, and were also included in the PhD Survey 2021 of the University of Groningen<sup>3</sup>. At the time of filling out the questionnaire (summer of 2022) the COVID-19 pandemic had lasted more than two years (2 years, 4 months) and all COVID-restrictions had been lifted.

The strongest negative effect of COVID-19 on PhD students' project concerned discussing ideas and findings with colleagues and peers and data collection (Table 13). They also experienced a negative effect on dissemination and sharing research findings with stakeholders and others, and data collection. The pandemic had a small positive effect on writing and data analysis. This mirrors the results of the PhD Survey 2021 at the University of Groningen.

Table 13. Impact of Covid-19 on the ability to engage in aspects of the PhD project

What impact has COVID-19 had on the ability to engage in this work:	Mean (SD)
Data collection	2.21 (.91)
Data analysis	2.69 (.82)
Writing	2.78 (.89)
Discussing ideas and findings with colleagues and peers	1.96 (.90)
Dissemination and sharing research finding with stakeholders and other	2.10 (.90)

*Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive).*

PhD students reported a small negative effect of COVID -19 on their mental health and progress of their PhD project (Table 14). Motivation to work on the PhD project, contact with supervisors and work-life balance were (on average) not impacted. For future career prospects they indicated a small positive effect.

Table 14. Impact of Covid-19 on other aspects

What impact did COVID-19 have on your:	Mean (SD)
Motivation to work on PhD project	2.46 (0.83)
Progress of PhD projects	2.24 (0.89)
Future career prospects	2.70 (0.75)
Mental health	2.22 (0.82)
Work-life balance	2.54 (1.04)
Contact with daily supervisor/promotor	2.51 (0.77)

*Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive).*

Additional questions were asked about specific aspects of their well-being (Table 15). One third of the PhD students feels overwhelmed in bigger groups of people due to the COVID-19 pandemic, one quarter does not feel a sense of belonging to their research group, one fifth feels anxious in social situations or feel lonely. Almost one sixth feels depressed due to the COVID-19 pandemic. More than 16% of the PhD students listed other negative and positive effects. Negative effects that were mentioned: anxiety about COVID-19 infections, anxiety in general, tiredness, lack of motivation, more work pressure because they feel they need to make up for lost time, feeling less socially connected, needing more time for themselves, and racism against Asians. Positive effects that were mentioned: discovery of possibilities of working remotely, more appreciation of face-to-face contact, and stronger connectedness with the family.

<sup>2</sup> <https://www.vitae.ac.uk/impact-and-evaluation/covid-19-impact-on-researchers>

<sup>3</sup> <https://www.rug.nl/education/phd-programmes/about/phd-survey/2021.pdf>

Table 15. Effects attributed to COVID-19 pandemic

Due to the COVID-19 pandemic I currently... (multiple answers are possible)	Number	Percentage
feel anxious in social situations	120	21.7
feel overwhelmed in bigger groups of people	179	32.2
feel lonely	108	19.5
feel depressed	78	14.1
do not feel a sense of belonging to my research group	149	26.9
Other – please explain	91	16.4

## Mental Health

### General mental health

To gain more insight into PhD students' mental health as well as the extent to which pursuing a PhD was seen as a cause of mental health problems, several questions were asked (Table 16). Firstly, a general WHO score (Topp *et al.*, 2015) was calculated based on the PhD students' current mood from the last two weeks, with a lower score indicating better mental health (0–100). PhD students scored just below the scale midpoint. Furthermore, respondents were asked to complete the General Health Questionnaire GHQ-12 (GHQ-12© David Goldberg, 1978). On the sum scale of 0-36 (with a lower score indicating a better health) 12 is considered a cut-off point to identify case for concern<sup>4</sup>. Almost 61% of the PhD students had a score of 12 or higher, 12.5% scored 24 or higher.

Respondents were asked to rate their current mental health (*i.e.*, during their PhD), their mental health during the COVID-19 pandemic, and their mental health during their Bachelor's and Master's studies, on a scale of 0 to 10 with a higher score indication better mental health (Table 16). Respondents reported a mean of 6.5 for their current mental health, a lower score of 5.5 during the COVID-19 pandemic, and a higher score of 7.4 for the time during their Bachelor's or Master's degree. Compared to the survey from 2020 (in the beginning of the COVID-19 pandemic), the self-reported mental health during the PhD was slightly higher.

Respondents were asked to rate their happiness on a scale (Abdek-Khalek, 2006) from 0 – 10 with a lower score indicating less happiness (Table 16). The average score was 6.6 and one third of the PhD students scored lower than 6.

In our study we measured PhD students resilience with Smiths *et al.*, (2008) Brief Resilience Scale (BRS). It consists of a 5-point scale with a lower score indicating less resilience. Resilience refers to the ability to quickly and successfully recover from stressful and difficult events. The PhD students' score was just above the midscale point.

Table 16. Mental health indicators

	Mean (SD)
WHO score (0-100) <sup>1</sup>	48.28 (20.88)
GHQ-12 (0-36) <sup>2</sup>	14.69 (6.63)
Mental health, current <sup>3</sup>	6.49 (1.96)
Mental health, during-COVID-19 pandemic <sup>3</sup>	5.53 (2.13)
Mental health during Bachelor's / Master's <sup>3</sup>	7.44 (1.55)
Do you feel happy in general? <sup>4</sup>	6.60 (1.87)
Resilience <sup>5</sup>	3.28 (0.78)

<sup>1</sup> Answers were given on a scale of 0 = all the time to 5=at no time. A sum score of the 5 WHO items was calculated and multiplied by 4. Note that the 2022 WHO-score cannot be compared to the 2020 WHO score, since different answer categories were used.

<sup>2</sup> Answers were given on a scale of 0 to 3. A sum score of the 12 GHQ items was calculated.

<sup>3</sup> Answers were given on a scale of 0 = extremely poor to 10 = extremely good.

<sup>4</sup> An answer was given on a scale of 0 = minimum score to 10 = maximum score.

<sup>5</sup> Answers were given on a scale of 1= completely disagree to 5 = completely agree.

<sup>4</sup> <https://support.gl-education.com/knowledge-base/assessments/general-health-questionnaire-support/about-the-general-health-questionnaire/faqs/>



### Mental health and PhD trajectory

According to 5% of the respondents following a PhD trajectory did not affect their mental health at all, 25% reported a negative effect, 42% sometimes a negative and sometimes a positive effect and 24% reported a positive effect (Table 17).

Table 17. In your experience, is doing a PhD affecting your mental health?

	Number	Percentage
No	26	4.7
Overall, doing a PhD has a large negative effect on my mental health	65	11.7
Overall, doing a PhD has a small negative effect on my mental health	73	13.2
Sometimes doing a PhD has a negative effect on my mental health, sometimes a positive effect	235	42.4
Overall, doing a PhD has a small positive effect on my mental health	77	13.9
Overall, doing a PhD has a large positive effect on my mental health	58	10.5
I don't know	20	3.6

Respondents who indicated a negative effect were asked what aspects of their PhD trajectory negatively affected their mental health (Table 18). Aspects that were mentioned by more than one third of the PhD students were insecurities about own capabilities, high workload, problems with work-life balance, not being able to finish in time or doubts about being able to finish in time, not achieving good results or doubts about achieving good results, procrastination/ lack of motivation. Compared to the data from 2020, problems with work-life balance, insecurities about future career, insecurities about own capabilities, not being able to finish in time or doubts about being able to finish in time, and not achieving good results or doubts about achieving good results all show a decrease of more than 5%.

Table 18. Aspects of doing a PhD trajectory that negatively affect mental health

	Number	Percentage
High workload	221	39.9
Problems with work-life balance	218	39.4
Insecurities about future career	160	28.9
Insecurities about own capabilities	254	45.8
Not being able to finish in time or doubts about being able to finish in time	195	35.2
Not achieving good results or doubts about achieving good results	195	35.2
Issues due to practical setbacks in the project	146	26.4
Publication pressure	159	28.7
Problems with supervisors	85	15.3
Problems with colleagues	34	6.1
High level of competition in academia	120	21.7
Unclear expectations	128	23.1
Procrastination, lack of motivation	194	35.0
Other <sup>1</sup>	40	7.2

<sup>1</sup> Other issues negatively affecting the respondents' mental health were balancing PhD with other jobs/personal life, additional task on top of PhD tasks, lack of support from UG in case of problems, practical problems (lack of finances, housing), COVID-19 pandemic, lack of social contacts, working individually without collegial support.

Respondents who indicated a positive effect on their mental health were asked what aspects of following a PhD trajectory positively affected their mental health. They addressed the following aspects: opportunity to learn about and dive into a topic of their interest, interacting with colleagues (sparring and receiving support), feelings of accomplishing something, freedom and flexibility in research and working hours, support and acknowledgment from supervisors, contribution to personal development, gaining professional skills, provision of income and opportunities for future career.

### Burnout and work engagement

The Maslach Burnout Inventory-General Survey and the Utrecht Work Engagement Scale (UWES-9S) (Schaufeli *et al.*, 2002) were used to measure the PhD students' levels of burnout and engagement. Some items were slightly rephrased to match the PhD students' situation. All factors related to burnout (exhaustion, cynicism, and professional efficacy) had sufficient reliability. The average levels of exhaustion and cynicism were below the scale-midpoint of 4 and the average level of professional efficacy was above the scale midpoint (Table 19). Work engagement consisted of three factors: dedication, vigour, and absorption. However, the absorption scale, which concerned aspects such as getting carried away while working, or feeling happy when working intensely, did not have sufficient reliability ( $\alpha = 0.42$ ) and was therefore not included in the analysis. The average level of dedication was about the scale midpoint of 4 and vigour was at the scale midpoint. These findings mirror the data from 2020.

Table 19. Mean and standard deviation of the different factors of burnout and engagement

	Mean (SD)
Burn out: Exhaustion	3.71 (1.19)
Burn out: Cynicism	3.63 (1.49)
Burn out: Professional efficacy	5.00 (0.75)
Work engagement: Dedication	4.62 (1.06)
Work engagement: Vigour	3.93 (1.05)

*Note: answers were given on a scale of 1 (never) to 7 (all the time).*

### Mental health and career

We asked PhD students whether they worry about their career and if so what they worried about. Career worries seem to be quite common: 39% of the PhD students worry about it sometimes, 23% often, and 10% all the time (Table 20). In general PhD students worry a little less about their career than in 2020. Over one third of all PhD students worries about the high competition to obtain the job they want, not knowing what kind of career they want and being unsure whether they are good enough for the kind of job they want (Table 21). Compared to 2020 PhD students are experiencing less of the career worries specified in Table 21, with the exception of worrying that they have to a move to another place for a new job.

Table 20. Answers to the question: 'Do you currently worry about your career?'

	Number	Percentage
Never	51	9.2
Rarely	102	18.4
Sometimes	218	39.4
Often	127	22.9
All of the time	56	10.1

Table 21. Types of career worries

	Number	Percentage
Not knowing what kind of career I want	192	34.7
Being unsure whether I am good enough for the kind of job I want	181	32.7
Having to move to another place for a new job	150	27.1
Feeling unprepared for the job I want	124	22.4
The high competition to obtain the job I want	206	37.2
Having to start a new job while my PhD thesis is not yet finished	115	20.8
The work-life balance in my future job	134	24.2
Being insecure about my skills in writing application letters and/or job interviews	87	15.7
Other <sup>1</sup>	61	11.0

<sup>1</sup> Other represents availability of jobs, finding suitable job based on skills and interests, finding job compatible for needs of family/private life, lack of financial security (e.g. temporary contracts), discrimination/unequal opportunities, workpermits, language skills, mental health.

### Relationship between mental health aspects, progress, and satisfaction

The score on the general mental health test (WHO) had moderate correlations with satisfaction with the PhD trajectory overall, satisfaction with performance within the PhD, satisfaction with supervision, and having considered quitting the PhD project (Table 22). The aspects of burnout – exhaustion, cynicism, and professional efficacy – and of work engagement – vigour and dedication – had moderate to strong correlations with satisfaction with the PhD trajectory overall, satisfaction with performance within the PhD, satisfaction with supervision, and having considered quitting the PhD project. Mental health as measured with WHO, GHQ-12 and current mental health had a moderate correlation with resilience, cynicism, professional efficacy, vigour and dedication and a strong correlation with exhaustion.

Table 22. Correlations between mental health, satisfaction with PhD trajectory, quitting, burn out, work engagement and resilience

		Mental health				Satisfaction		Quitting		Burn out		Work engagement		Resilience	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
Mental health	WHO (1)	1													
	GHQ-12 (2)	.721	1												
	Current mental health (3)	-.753	-.769	1											
	Happiness (4)	-.693	-.712	.820	1										
Satisfaction with...	PhD trajectory overall (5)	-.534	-.499	.490	.504	1									
	Performance within PhD (6)	-.438	-.485	.460	.458	.605	1								
	Supervision (7)	-.434	-.395	.348	.352	.554	.331	1							
	Considered quitting (8)	-.445	-.474	.459	.413	.554	.419	.489	1						
Burn out	Exhaustion (9)	.643	.692	-.600	-.597	-.573	-.446	-.482	-.523	1					
	Cynicism (10)	.519	.525	-.450	-.470	-.611	-.452	-.493	-.578	.658	1				
	Professional efficacy (11)	-.511	-.519	.440	.467	.558	.582	.400	.481	-.534	-.643	1			
Work engagement	Vigour (12)	-.580	-.541	.455	.501	.539	.448	.428	.495	-.623	-.609	.662	1		
	Dedication (13)	-.523	.427	.498	.601	.447	.468	.523	-.575	-.700	.726	.790	-.523	1	
	Resilience (14)	-.416	.426	.408	.239	.205	.148	.189	-.393	-.277	.389	.320	.277	-.416	1

Note: all correlations are significant at the 0.01 level (2-tailed).

# Support at the UG & UMCG

## Access to support

The respondents were asked about the support that they receive from the UG/UMCG with their mental health problems (Table 23). First, they were asked whether they knew whom to contact if they experienced mental health issues. While respondents in 2018 mostly did not know whom to talk to at the UG/UMCG, in 2020 the majority of the respondents did know whom to talk to. The respondents in 2022 had the same score as in 2020, so no further increase was seen. The mean score is above the scale mid-point indicating that there still is a group of PhD students who does not know whom to talk to. Additionally, respondents agreed that they would like to talk to someone at the UG/UMCG and that their supervisors would be supportive. However, the respondents said that they would rather talk to and expected support from their daily supervisor rather than their primary supervisor (Table 22). Although respondents would talk to someone at the UG/UMCG if they were to experience mental health problems, they give preference to talking with a professional outside the UG/UMCG.

Table 23. Statements about talking about mental health problems

	Mean (SD)
If I were to experience mental health problems, I would know who I could talk to at the University/UMCG	3.19 (1.27)
If I were to experience mental health problems, I would like to talk about it with someone at the University/UMCG	3.32 (1.09)
If I were to experience mental health problems, I would talk about this with my primary supervisor	3.23 (1.27)
My primary supervisor would act supportively if I told him/her I am experiencing mental health problems	4.01 (1.03)
If I were to experience mental health problems, I would talk about this with my daily supervisor	3.52 (1.26)
My daily supervisor would act supportively if I told him/her I am experiencing mental health problems	4.12 (1.02)
I would talk about this with a professional outside the University/UMCG.	3.92 (0.98)

*Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).*

Respondents were asked whether or not they knew they had access to certain forms of PhD support (Table 24). PhD students were most aware of the courses and workshops offered through PhD support and the Career Perspectives series (close to 90%). Around two thirds knew that they had access to a confidential advisor and the PhD Support website. A little over half of the PhD students knew about opportunities for individual counseling offered by PhD support and PhD psychologists. This is a small increase compared to 2020, when 47% (less than half of PhD students) knew that there was a psychologist specialized in PhD student problems. PhD students knew least about having access to an independent ombuds person. Among the FSE PhD students 62% knew that they have access to a PhD counselor and among the UMCG PhD students 38% replied positively. Among the UMCG PhD students 68% knew that they had access to a PhD coach. The overall picture shows that between 2018 and 2020 the visibility of PhD student mental health support increased, but between 2020 and 2022 it has stayed the same.

Table 24. Percentage of PhD students that knows about different forms of PhD support

Before filling out this survey, did you know that as a PhD student you have access to...	Yes	No
the PhD Support website	63.1	36.9
courses and workshops (through PhD support)	88.9	11.1
Career Perspectives series	89.3	10.7
individual counseling (through PhD support)	56.5	43.5
PhD psychologists	51.7	48.3
an independent ombuds person (onafhankelijke ombudsfunctionaris)	32.9	67.1
a confidential advisor (vertrouwenspersoon)	72.9	27.1
PhD mentor	41.8	58.2
PhD counselors at the faculty (only FSE PhD students) <sup>1</sup>	62.1	37.9
PhD counselors at the faculty (only UMCG PhD students) <sup>1</sup>	38.2	61.8
PhD coach within Managing your PhD (only for UMCG) <sup>1</sup>	68.3	31.7

<sup>1</sup> Percentages based on response of PhD students from those particular graduate schools only

### Experiences with mental health support

We asked the PhD students whether or not they were experiencing or had experienced any kind of mental health problems during their PhD. While 44% stated that they had never experienced any problems, 30% mentioned that they had experienced problems in the past, and 21% reported currently having problems (Table 25). These scores are comparable to 2020.

Table 25. Number of PhD students who are experiencing or have experienced mental health problems during their PhD

	Number	Percentage
No, I have never experienced mental health problems that affected my work	242	43.7
Yes, I have experienced mental health problems that affected my work	169	30.5
Yes, I am currently experiencing mental health problems that affect my work	114	20.6
Prefer not to say	29	5.2

The PhD students who experienced mental health problems in the past or who are experiencing them currently ( $n = 283$ , more than half of the respondents) were asked whom they talked to about their problems at the UG/UMCG (Table 26). Almost 12% said that they had not talked to anyone, which shows a small increase compared to 2020. One quarter reported having talked to their supervisor or colleagues. More than 8% indicated that they talked to the PhD psychologist, which shows a large increase compared to 2020 when only 2% talked to the PhD psychologist. Less than 6% talked to a confidential advisor, someone from the AMD, Student Support Services, career services, PhD coordinator, PhD mentor or PhD counselor. The majority of the PhD students (84%) benefitted from talking to someone about their mental health problems (Table 27). Respondents reported that it was somewhat helpful to quite helpful to talk to their supervisor or colleagues about their problems.

Table 26. Number of PhD students who have talked about their mental health problems with someone at the UG/UMCG

	Number	Percentage
I have never talked to anyone at the UG/UMCG about my problems	65	11.7
I have talked to my supervisor	143	25.8
I have talked to a colleague / colleagues	131	23.6
I have talked to the psychologist for PhD students	46	8.3
I have talked to the confidential advisor	33	6.0
I have talked to my PhD coordinator or mentor	21	3.8
I have talked to someone from Student Support or Career Services	26	4.7
I have talked to someone from AMD (Health, Safety and Environment Service), e.g. an occupational health worker	32	5.8
Yes, to a PhD counselor (available for FSE and UMCG)	12	2.2
Other <sup>1</sup>	24	4.3

<sup>1</sup> Other: external psychologist/therapist, family & friends, other people at the UG/UMCG.

Table 27. How helpful was talking to someone? Mean, SD, number and percentage of PhD students

How helpful was/is it to talk about your problems with the person(s) you indicated you talk(ed) to in the previous question? <sup>1</sup>	Mean (SD)	
	3.31 (0.96)	
	Number	Percentage
Not helpful at all	10	4.7
Hardly helpful	24	11.3
Somewhat helpful	89	41.8
Quite helpful	70	32.9
Extremely helpful	20	9.4

<sup>1</sup> Note: answers were given on a scale of 1 (not helpful at all) to 5 (extremely helpful).

We asked the PhD students who talked to someone at the UG/UMCG to elaborate on the support they received. Negative experiences concerned feeling unsafe or not being taken seriously after sharing their struggles with their supervisors, supervisors being too directly involved to objectively help, although they felt that someone listened to their struggles it did not always lead to actual solutions, and experiencing a lack of knowledge of how to help with certain mental health issues.

Positive experiences concerned supportive supervisors who made arrangements for the PhD student such as lightening their work load, helpful sessions with the PhD psychologist (although some indicated they would have liked to have more sessions), being referred to external/professional help, following courses (BALANS/PhD support), and being heard.

Those who did not talk to someone at the UG/UMCG indicated that they were already receiving help outside of the UG/UMCG (psychologist, GP, friends), were experiencing mental health issues that they had had for a longer time and knew how to handle them, were afraid that they would be judged for it or that it might affect their future career. Some of them also mentioned not knowing where to go for help, or to prefer not to talk about it and rather solve the problems they were experiencing by themselves.

### Suggestions of PhD students to improve mental health and social safety

We asked the PhD students to name one thing that the UG/UMCG could do or change that would contribute to their well-being. The suggestion that was given most by the PhD students called for an immediate shift in the time allotted for completion of a PhD programme. PhD students indicated that their current PhD scholarship programme, with a maximum of three years, does not allow ample room to comfortably complete the programme. Another popular suggestion was improving the quality of the supervision offered to PhD students. This largely entailed supervisors to receive training to better their communication skills and in turn improve the relationship between PhD students and their

supervisors. It was also suggested that the well-being of PhD students could be improved by specifically offering them more academic support (offering additional research and language courses) as well as improving the availability and visibility of mental health support at the university (in terms of increased availability and quality of student psychologists at the university). Focusing on fostering a stronger sense of community at the university was also often mentioned by students. By creating more moments where especially PhD students can come together, the PhD programme could feel much less lonely, and this would contribute to the overall well-being of students. Other often proffered suggestions included reducing the workload of PhD students, greatly improving the oversight of supervisor behaviour to curtail low-quality supervision or abuse towards students and showing more respect towards PhD scholarship students.

Additionally we invited PhD students to give comments related to PhD students' well-being at the UG/UMCG. The response for this question was relatively low (48 total comments). The suggestions were mostly geared towards the mental health of PhD students, including: calling attention to the alarming and general poor mental health of PhD students, improving mental health support and its visibility at the university and a call to recognize signs of burnout at the university. Apart from mental health, improving the contracts of PhD students and the quality of PhD student supervision were most mentioned. Other comments pertained to issues such as improving the communication of information at the university and normalizing respecting the work and time of PhD students at the university.

We asked PhD students what the UG/UMCG could do to increase social safety. Below, we will describe the suggestions that were frequently mentioned (for an overview see Appendix VI). PhD students indicated that social safety would benefit if:

- social interaction with colleagues was promoted, for example by organizing social events (for meeting colleagues in general or specifically to enhance contact between international and Dutch colleagues) and creating a hang-out or coffee corner for PhD students in the department.
- PhD students were more clearly informed of where they can go for help in case of problem or complaints, for example by spreading this information through newsletters or poster/flyers.
- certain training was offered or even made mandatory for UG/UMCG staff, such as Intercultural Competence and Active Bystander training.
- supervisors and mentors participated in a mandatory training on how to supervise PhD students. PhD students also mentioned that it is important to follow-up non-acceptable behaviour with consequences, as to prevent future 'abuse' and continuation of unacceptable behaviour of supervisors and mentors.
- more attention was given to equity, diversity and inclusion in teams.



## Lifestyle Questions

### Additional (semi-)professional activities

PhD students were asked whether or not they engaged in additional activities. Almost 65% of all PhD students stated that they did not. PhD students who did engage in additional activities were most likely to have another job or to be on the board of an organization or actively involved in an organization (Table 28). This mirrors the findings from 2020.

Table 28. Number and percentage of PhD students who engage in structural activities in addition to their PhD

	Number	Percentage
No additional activities	360	65.0
I have another job	78	14.1
I am on the board of an organization or actively involved in an organization	49	8.8
I am actively involved in a political party	4	0.7
I do voluntary work	32	5.8
I am an informal caregiver for a relative or other person	13	2.3
I am a professional / semi-professional athlete or musician	16	2.9
Other <sup>1</sup>	26	4.7

<sup>1</sup> Other additional activities are mainly being self-employed, committee work, parenting or additional job/activity at university.

### Work-life balance

We asked the respondents about working overtime, taking vacation/leave days and whether working above the required hours causes them stress (Table 29). Half of the PhD students generally work more hours than their contract requires. This group ( $n = 256$ ) indicated to work around 13 hours extra each week (Mean ( $SD$ ) = 13.29 (13.10), range = 2-60 hours). Over half of the PhD students that work more hours experience stress because of it. Three quarters of the PhD students take all the vacation/leave days that they are entitled to. Among those who do not take off all the vacation/leave days, 62% experience stress because of it.

Table 29. Working hours and vacation in percentages

	Yes	No	Not applicable	Prefer not to say
Do you generally work more hours than your contract requires?	49.0	36.6	10.6	3.8
Does working overtime cause you extra stress (for those who do work more hours)?	53.2	42.7	-	4.1
Do you generally take all the vacation/leave days you are entitled to each year?	74.7	16.2	7.7	1.5
Does not taking the vacation/leave days cause you extra stress (for those who do not take vacation/leave days)?	62.5	36.4	-	1.1

PhD students were asked what their reasons were for working overtime. Reasons that were mentioned are: too much work for the allotted time and feeling they have fallen behind, having to meet deadlines, feeling pressure from supervisors and the expectation to work more than the contract stipulates, working on experiments that require to work outside regular working hours, keeping on track with overall PhD trajectory, self-motivation and interest in the topic, compensation for inefficient work time /procrastination /guilt of not doing enough, additional tasks and projects besides PhD-research, a job outside of PhD trajectory, preferring to get things done (which then reduces the stress) or stay in the flow and finally, increasing future career opportunities.

PhD students were also asked what their reasons were for not taking the vacation/leave days they were entitled to. Here PhD students mentioned aspects such as deadlines, having to catch up, feeling pressure from supervisors, not being able to relax when there is still work to do, not feeling the need for vacation/time off, or not having a budget for vacation.

Respondents were asked questions related to their work-life balance (Table 30) (Brough *et al.*, 2014; Waumsley *et al.*, 2010). They reported that due to work, they had to change plans for their non-work activities. They also experienced difficulties balancing work and non-work activities, and indicated that the demands of work interfered with their non-work activities. Compared to 2020, PhD students experienced less difficulties in maintaining their work-life balance.

Table 30. The respondents' work-life balance

	Mean (SD)
I have difficulties balancing my work and non-work activities	3.18 (1.12)
The demands of my work interfere with my life away from work	3.15 (1.14)
The amount of time my work takes up makes it difficult to fulfil other interests	3.10 (1.15)
Things that I want to do at home do not get done because of work demands	3.00 (1.14)
My work produces strain that makes it difficult to fulfil other responsibilities and duties	3.01 (1.14)
Due to my work, I have to make changes to my plans for activities outside of work	3.35 (1.07)
Overall, I believe that my work and non-work life are balanced	3.04 (1.11)

*Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).*

## Differences

In this chapter several group-based differences are discussed. We will focus on significant differences based on gender (female, male), nationality (Dutch, nationality from EEA country other than Dutch, other nationality), graduate school (GSBSS, GSH, GSMS, GSSE), type of contract (employed as a PhD student by UG/UMCG, externally financed PhD students, scholarship from UG/UMCG) and phase of the PhD project (junior/senior). For each of these groups we will indicate the differences and include a reference to the tables in the appendix. Differences were found for most of the themes discussed in the previous chapters. No differences between groups were found in support at the UG/UMCG.

### Gender-based differences (appendix I)

There were few differences based on gender.

#### *Progress and satisfaction*

- Female PhD students met less frequently with their primary supervisor than male PhD students.
- Female PhD students experience stronger informal relationships with colleagues.

#### *Impact of COVID-19 pandemic*

- Female PhD students are more positive about their work-life balance than their male colleagues.

#### *Mental health*

- We found that female PhD students scored higher on the GHQ12, indicating a lower general health perception.
- Female PhD students compared to male PhD students also indicated a lower score on their mental health during their bachelor/master.

### Nationality-based differences (appendix II)

There were several significant differences based on nationality in terms of progress and satisfaction, the impact of COVID-19, mental health and lifestyle.

#### *Progress and satisfaction*

- Dutch PhD students are more confident about their daily supervisors being satisfied with their performance than PhD students from outside the EEA.
- PhD students with a nationality outside the EEA were more confident that they would be able to submit their thesis to the assessment committee before the end of the contract than Dutch and EEA students.
- Dutch PhD students are more confident that they will find a suitable and interesting job after finishing the PhD trajectory compared to their colleagues with EEA and other nationalities.
- PhD students with a nationality from outside the EEA differed from their non-Dutch EEA colleagues in that they indicated that they had hardly ever considered quitting their PhD project.

#### *Impact of COVID-19 pandemic*

- We found nationality-based differences regarding the impact of COVID-19 on the ability to engage in discussing ideas and findings with colleagues and peers, and on future career prospects. Although students of all nationalities experienced a negative impact of COVID-19, PhD students with a non-EEA nationality experienced the least negative impact on the ability

to engage in discussing ideas and findings with colleagues and peers whereas Dutch PhD students experienced the least negative impact on their future career prospects.

#### *Mental health*

- We found many significant differences for the mental health indicators, *i.e.* the WHO-score, current mental health, mental health during the COVID-19 pandemic, happiness scale and resilience. Dutch PhD students indicate better mental health than PhD students with EEA and other nationalities.
- Significant differences were also found in terms of cynicism (highest for respondents with EEA nationality), dedication (highest for Dutch PhD students), and vigour (highest for respondents from outside the EEA).

#### *Lifestyle*

- There was a significant difference regarding the perception of a balanced work and non-work life; here PhD students with EEA nationality scored lowest and Dutch PhD students highest.

### **Graduate school-based differences (appendix III)**

There were several significant differences based on graduate school in terms of progress and satisfaction, the impact of COVID-19, mental health and lifestyle.

#### *Progress and satisfaction*

- PhD students from the GBSS reported being more satisfied with their own performance compared to PhD students from the GSSE.
- PhD students from the GSSE were less confident than PhD students from GSH that they would finish their PhD.
- The PhD students from the GSH were less confident of their ability to find a suitable job after finishing their PhD than other PhD students. There were also significant differences between GSMS en GSSE on this item with GSMS students being more confident of finding a suitable job.
- PhD students from the GSSE were the least satisfied with their trajectory compared to PhD students from the other Graduate Schools.
- There were also differences related to the frequency of meetings with both daily supervisor and primary supervisor. Here, GSMS PhD students had the least frequent meetings with the daily and primary supervisor, GSH had the most frequent meetings with them.
- Differences were also found in terms of atmosphere within the department. PhD students from GSMS experienced stronger and more positive formal relationships with their colleagues than PhD students from GSBSS. PhD students from GSBSS also reported the weakest and least positive informal relationships with their colleagues.

#### *Impact of COVID-19 pandemic*

We found differences between PhD students regarding their perceptions of the impact of COVID-19.

- These pertained to motivation to work on the PhD project, future career prospects, mental health and work-life balance. For all of these topics PhD students from the GSH scored the lowest, indicating a negative impact, compared to PhD students from the GSMS.

#### *Mental health*

Differences related to mental health concerned both mental health indicators and burnout and engagement scores.

- We found significant differences in WHO score (best for GSBSS), current mental health (best for PhD students from GSMS), related to the happiness scale (best for PhD students from

GSBSS) and related to resilience (best for PhD students from GSMS). In all instances, except for resilience, PhD students from GSSE scored the lowest.

- Next to the differences in mental health indicators we found differences related to exhaustion (highest for GSSE, lowest for GSBSS), professional efficacy (highest for GSH, lowest for GSSE), and work dedication (highest for GSH, lowest for GSSE).

### *Life style*

The lifestyle differences mainly pertained to strain and worklife balance.

- PhD students from GSSE had the highest score on perceived strain, whereas those from GSBSS scored lowest on this item.
- This is also the case for the overall perception that the work and non-work life are balanced; here PhD students from GSBSS had the highest score and those from GSSE the lowest.

### **Type of contract-based differences (appendix IV)**

We compared three groups of PhD students based on their type of contract, *i.e.* employed as a PhD student by the UG/UMCG, externally financed PhD students, and PhD scholarship students at the UG/UMCG. Here significant differences for the topics of progress and satisfaction, impact of the COVID-19 pandemic, and mental health were found.

### *Progress and satisfaction*

- There were differences related to satisfaction with how they were performing in their PhD, confidence regarding finishing before the end of the contract and finding a suitable and interesting job after having finished their PhD. Externally financed PhD students were more satisfied with how they were performing in the PhD trajectory than those employed as a PhD student by the UG/UMCG. PhD scholarship students at the UG/UMCG were more confident that they would finish their PhD before the end of the contract than those employed as a PhD student by the UG/UMCG. However, these PhD scholarship students at the UG/UMCG were less confident that they would find a suitable and interesting job than the externally financed PhD students.
- Regarding the frequency of meetings we found differences regarding both meetings with primary and daily supervisor. PhD students employed by the UG/UMCG reported the most frequent meetings with their supervisors, whereas externally financed PhD students reported the least frequent meetings with their supervisors.
- Differences were also found regarding the atmosphere within the department. PhD students employed at the UG/UMCG experienced stronger and more positive formal and informal relationships with their colleagues than PhD students with a scholarship at the UG/UMCG.

### *Impact of COVID-19 pandemic*

Here only one significant difference was found, namely related to being able to discuss ideas and findings with colleagues and peers. Even though all PhD students scored low on this item, indicating a negative perception, PhD students employed at the UG/UMCG had the lowest score.

### *Mental health*

Differences related to mental health pertained to the burnout and engagement scores.

- Externally financed PhD students reported lower scores on cynicism than the other PhD students.
- PhD students employed by the UG/UMCG reported lower scores on professional efficacy than the other PhD students.

### Phase of the project-based differences (appendix V)

We found the most consistent group differences for phase of the project. The overall picture that emerges is that junior PhD students feel better and are more content than their senior colleagues.

#### *Progress and satisfaction*

- Senior PhD students experienced a higher workload and were less confident that they would submit their thesis before the end of their contract.
- Senior PhD students had more often considered quitting their project, were less satisfied with the PhD trajectory so far and with the supervision they received.
- Senior PhD students indicated fewer meetings with daily and primary supervisor, they were also less satisfied with these meetings.
- Junior PhD students were more positive about their sense of belonging.

#### *Impact of COVID-19 pandemic*

- We found significant differences regarding data collection, data analysis, discussing ideas and findings with colleagues and peers, dissemination and sharing research findings, motivation to work on PhD project, progress of the project and future career prospects.
- Concerning the impact of the COVID19 pandemic, junior PhD students experienced a less negative impact.

#### *Mental health*

- We found significant differences in terms of WHO score, GHQ-12 score, mental health during the bachelor's/master's, happiness scale and resilience. For these indicators junior PhD students scored more positively than senior PhD students with the exception of mental health during the bachelor's/master for which they indicated a lower mental health.
- When looking at the burnout and engagement scales, differences were found for all scales (exhaustion, cynicism, professional efficacy, dedication, vigour) in the sense that junior PhD students scored in a way indicating better mental health.

#### *Lifestyle*

- We asked different questions regarding work-life balance (*e.g.* balancing, demands of work, strain). There were significant differences for all items, again pointing to junior PhD students having a better work-life balance.

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## Appendix I – Tables per Gender

Table 2.1. Percentage of respondents' nationality, per gender

Gender	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Male	38.0	19.0	42.5
Female	49.3	22.0	27.9

Table 3.1. Percentage of respondents from each graduate school, per gender

Gender	GSBSS	GSCF	GSEB	GSH	GSL	GSMS	GSP	GSSE	GSSS	GSTRS
Male	7.5	3.0	6.5	7.0	3.0	22.0	2.0	4.0	4.5	2.5
Female	18.1	2.1	4.2	9.5	2.1	34.7	0.6	21.4	2.7	1.8

Table 4.1. Percentage of respondents per type of contract, per gender

Gender	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG	MD/PHD	End of contract	Other
Male	50.5	6.5	33.5	2.0	1.5	5.5
Female	51.6	6.2	27.6	3.9	3.6	5.9

Table 5.1. Percentage of allotted time period for the PhD project, per gender

Gender	< 3 years	3 years	4 years	> 4 years	Other	Don't know
Male	5.0	10.6	74.9	5.0	2.5	2.0
Female	4.2	8.9	71.5	8.3	4.5	2.7

Table 6.1. Percentage of respondents working full-time or part-time, per gender

Gender	Full-time	Part-time	Other/don't know
Male	84.7	7.1	8.2
Female	80.5	12.7	6.8

Table 7.1. Percentage of respondents per current year of PhD, per gender

Gender	First year	Second year	Third year	Fourth year	Fifth year	Over five years
Male	26.6	24.6	21.1	21.6	5.0	1.0
Female	33.5	19.6	21.4	14.8	6.2	4.5

Table 7.1.1. Percentage of junior and senior respondents, per gender

Gender	Junior	Senior
Male	51.3	48.7
Female	53.1	46.9



Table 8.1. Mean (SD) of satisfaction with performance, project characteristics, and confidence, per gender

	Male	Female
Overall, I am satisfied with how I am performing in my PhD.	3.52 (0.99)	3.43 (1.01)
Overall, my primary supervisor (promotor) is satisfied with how I am performing.	4.01 (0.70)	3.99 (0.72)
Overall, my daily supervisor is satisfied with how I am performing.	3.94 (0.79)	4.01 (0.75)
Overall, I know what my supervisors expect of me	3.80 (0.93)	3.74 (0.91)
The workload in my PhD is high.	3.89 (0.89)	3.83 (0.92)
The complexity of my PhD is high.	4.10 (0.78)	3.96 (0.83)
I am confident that I will, eventually, finish my PhD.	4.30 (0.75)	4.18 (0.86)
I am confident that I will be able to submit my thesis to the assessment committee before the end of my contract.	3.23 (1.22)	3.06 (1.29)
I am confident that I will find a suitable and interesting job after I have finished my PhD.	3.69 (1.05)	3.72 (1.07)

Table 9.1. Progress of the PhD students with their thesis. Percentage of respondents per statement, per gender

	Male	Female
Yes, I think I will be able to finish my PhD in time	38.5	38.4
No, I have fallen behind but I still think I can finish in time	25.0	21.4
No, I have fallen behind and I don't think I will be able to finish in time	17.0	16.4
I was unable to finish in time and am currently on an extension	7.5	6.0
I was unable to finish in time and am currently finishing my thesis in my own time	1.5	3.3
I have already defended my thesis or sent the manuscript to the assessment committee	0.5	0.3
I don't know / other	-	14.3

Table 10.1. Mean (SD) of consideration of quitting, and satisfaction with the trajectory and the supervision, per gender

	Male	Female
Have you ever considered quitting your PhD project? <sup>1</sup>	3.99 (1.23)	3.89 (1.36)
How satisfied are you with your PhD trajectory so far? <sup>2</sup>	3.44 (0.89)	3.53 (0.93)
How satisfied are you with the supervision you receive? <sup>2</sup>	3.94 (0.95)	3.84 (1.06)

Note: answers were given on a scale from 1 to 5. <sup>1</sup> (1 = yes, very often, 5 = no, never), <sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Table 11.1. Mean (SD) of frequency and satisfaction with (online) supervision, per gender

	Male	Female
Frequency of (online) meetings with daily supervisor <sup>1</sup>	2.73 (1.16)	2.76 (1.07)
<b>Frequency of (online) meetings with primary supervisor<sup>1*</sup></b>	<b>3.25 (1.16)</b>	<b>3.46 (1.08)</b>
Satisfaction meetings with daily supervisor <sup>2</sup>	4.02 (1.06)	4.14 (.99)
Satisfaction meetings with primary supervisor <sup>2</sup>	3.95 (1.07)	3.89 (1.04)

Note: answers were given on a scale from 1 to 5. <sup>1</sup> (1 = several times a week; 2 = about once a week; 3 = several times a month; 4 = about once a month; 5 = less than once a month). <sup>2</sup> (1 = very dissatisfied, 5 = very satisfied). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 12.1. Mean (SD) of regarding the atmosphere within the department, per gender

	Male	Female
Formal relationships	3.40 (.75)	3.40 (.73)
<b>Informal relationships</b>	<b>3.04 (.92)*</b>	<b>3.24 (.94)</b>
Sense of belonging	3.64 (.78)	3.68 (.81)

Note: On the scale from 1 to 5, a higher score indicates a stronger and more positive sense of (in)formal relationships between colleagues. Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 13.1. Mean (SD) of impact of Covid-19 on the ability to engage in aspects of the PhD project, per gender

What impact has COVID-19 had on the ability to engage in this work:	Male	Female
Data collection	2.28 (.92)	2.19 (.91)
Data analysis	2.62 (.85)	2.74 (.80)
Writing	2.76 (.95)	2.81 (.86)
Discussing ideas and findings with colleagues and peers	2.01 (.93)	1.93 (.89)
Dissemination and sharing research finding with stakeholders and other	2.13 (.90)	2.06 (.89)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive).

Table 14.1. Mean (SD) of impact of Covid-19 on other aspects, per gender

What impact did COVID-19 have on your:	Male	Female
Motivation to work on PhD project	2.54 (.84)	2.39 (.82)
Progress of PhD projects	2.14 (.87)	2.29 (.89)
Future career prospects	2.71 (.79)	2.69 (.74)
Mental health	2.23 (.79)	2.22 (.84)
<b>Work-life balance**</b>	<b>2.39 (.99)</b>	<b>2.64 (1.05)</b>
Contact with daily supervisor/promotor	2.54 (.81)	2.48 (.75)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 15.1. Percentage of effects attributed to COVID-19 pandemic, per gender

Due to the COVID-19 pandemic I currently... (multiple answers are possible)	Male	Female
feel anxious in social situations	22.5	20.8
feel overwhelmed in bigger groups of people	25.0	37.1
feel lonely	22.5	17.8
feel depressed	16.5	12.2
do not feel a sense of belonging to my research group	27.5	26.7
Other – please explain	14.5	17.2

Table 16.1. Mean (SD) of mental health indicators, per gender

	Male	Female
WHO score (0-100) <sup>1</sup>	48.84 (21.21)	47.74 (20.42)
<b>GHQ-12 (0-36)<sup>2*</sup></b>	<b>13.97 (6.47)</b>	<b>15.14 (6.69)</b>
Mental health, current <sup>3</sup>	6.50 (2.12)	6.48 (1.87)
Mental health, during-COVID-19 pandemic <sup>3</sup>	5.64 (2.23)	5.47 (2.05)
<b>Mental health during Bachelor's / Master's <sup>3*</sup></b>	<b>7.61 (1.53)</b>	<b>7.33 (1.57)</b>
Do you feel happy in general? <sup>4</sup>	6.44 (2.04)	6.69 (1.79)
Resilience	3.32 (.76)	3.25 (.81)

<sup>1</sup> Answers were given on a scale of 0 = all the time to 5=at no time. A sum score of the 5 WHO items was calculated and multiplied by 4. Note that the 2022 WHO-score cannot be compared to the 2020 WHO score, since different answer categories were used.

<sup>2</sup> Answers were given on a scale of 0 to 3. A sum score of the 12 GHQ items was calculated.

<sup>3</sup> Answers were given on a scale of 0 = extremely poor to 10 = extremely good.

<sup>4</sup> An answer was given on a scale of 0 = minimum score to 10 = maximum score.

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 17.1 Percentage of 'In your experience, is doing a PhD affecting your mental health?', per gender

	Male	Female
No	8.0	2.7
Overall, doing a PhD has a large negative effect on my mental health	11.0	11.6
Overall, doing a PhD has a small negative effect on my mental health	13.5	13.1
Sometimes doing a PhD has a negative effect on my mental health, sometimes positive effect	39.0	45.4
Overall, doing a PhD has a small positive effect on my mental health	13.5	14.8
Overall, doing a PhD has a large positive effect on my mental health	10.0	9.8
I don't know	5.0	2.7

Table 18.1. Percentages of aspects of doing a PhD trajectory that negatively affect mental health, per gender

	Male	Female
High workload	40.0	40.7
Problems with work-life balance	42.5	37.7
Insecurities about future career	29.0	29.4
Insecurities about own capabilities	39.0	50.4
Not being able to finish in time or doubts about being able to finish in time	36.0	35.6
Not achieving good results or doubts about achieving good results	34.5	35.9
Issues due to practical setbacks in the project	28.0	25.5
Publication pressure	34.5	24.9
Problems with supervisors	13.0	16.3
Problems with colleagues	5.0	6.8
High level of competition in academia	21.5	21.7
Unclear expectations	23.0	22.6
Procrastination, lack of motivation	35.5	35.6
Other	7.5	6.5

Table 19.1. Mean (SD) of the different factors of burnout and engagement, per gender

	Male	Female
Burn out: Exhaustion	3.69 (1.14)	3.72 (1.21)
Burn out: Cynicism	3.63 (1.42)	3.66 (1.51)
Burn out: Professional efficacy	5.03 (0.73)	4.98 (0.76)
Work engagement: Dedication	4.61 (1.03)	4.61 (1.07)
Work engagement: Vigour	3.93 (0.97)	3.91 (1.08)

Note: answers were given on a scale of 1 (never) to 7 (all the time).

Table 20.1. Percentage of answers to the question: 'Do you currently worry about your career?', per gender

	Male	Female
Never	9.0	9.2
Rarely	19.0	18.7
Sometimes	42.0	36.8
Often	21.5	23.7
All of the time	8.5	11.6

Table 21.1. Percentage of types of career worries, per gender

	Male	Female
Not knowing what kind of career I want	30.5	37.1
Being unsure whether I am good enough for the kind of job I want	28.0	36.2
Having to move to another place for a new job	28.0	26.7
Feeling unprepared for the job I want	20.0	24.0
The high competition to obtain the job I want	33.5	40.1
Having to start a new job while my PhD thesis is not yet finished	21.0	20.5
The work-life balance in my future job	27.0	23.4
Being insecure about my skills in writing application letters and/or job interviews	15.5	16.3
Other	11.5	10.4

Table 23.1. Mean (SD) of statements about talking about mental health problems, per gender

	Male	Female
If I were to experience mental health problems, I would know who I could talk to at the University/UMCG	3.13 (1.28)	3.24 (1.27)
If I were to experience mental health problems, I would like to talk about it with someone at the University/UMCG	3.39 (0.99)	3.28 (1.14)
If I were to experience mental health problems, I would talk about this with my primary supervisor	3.43 (1.22)	3.12 (1.27)
My primary supervisor would act supportively if I told him/her I am experiencing mental health problems	4.07 (1.00)	3.97 (1.05)
If I were to experience mental health problems, I would talk about this with my daily supervisor	3.60 (1.20)	3.49 (1.29)
My daily supervisor would act supportively if I told him/her I am experiencing mental health problems	4.14 (0.93)	4.12 (1.07)
I would talk about this with a professional outside the University/UMCG.	3.73 (1.04)	4.01 (0.93)

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).

Table 24.1. Percentage of PhD students that knows about different forms of PhD support, per gender

Before filling out this survey, did you know that as a PhD student you have access to...	Male		Female	
	Yes	No	Yes	No
the PhD Support website	62.3	37.7	63.2	36.8
Courses and workshops (through PhD support)	84.8	15.2	90.8	9.2
Career Perspectives series	86.5	13.5	90.7	9.3
individual counseling (through PhD support)	50.0	50.0	60.4	39.6
PhD psychologists	50.3	49.7	52.7	47.3
an independent ombuds person (onafhankelijke ombuds functionaris)	34.0	66.0	31.0	69.0
a confidential advisor (vertrouwenspersoon)	64.8	35.2	77.4	22.6
PhD mentor	42.5	57.5	41.7	58.3

Table 25.1. Percentage of PhD students who are experiencing or have experienced mental health problems during their PhD, per gender

	Male	Female
No, I have never experienced mental health problems that affected my work	49.0	40.7
Yes, I have experienced mental health problems that affected my work	24.5	34.1
Yes, I am currently experiencing mental health problems that affect my work	20.5	20.8
Prefer not to say	6.0	4.5

Table 26.1. Percentage of PhD students who have talked about their mental health problems with someone at the UG/UMCG, per gender

	Male	Female
I have never talked to anyone at the UG/UMCG about my problems	13.0	11.3
I have talked to my supervisor	23.5	27.3
I have talked to a colleague / colleagues	18.5	27.0
I have talked to the psychologist for PhD students	5.5	10.1
I have talked to the confidential advisor	2.5	8.0
I have talked to my PhD coordinator or mentor or coach (UMCG)	3.0	4.5
I have talked to someone from Student Support or Career Services	1.5	6.2
I have talked to someone from AMD (Health, Safety and Environment Service), e.g. an occupational health worker	4.0	6.5
Yes, to a PhD counselor (available for FSE and UMCG)	2.0	2.4
Other <sup>1</sup>	4.0	4.5

<sup>1</sup> Other: external psychologist/therapist, family & friends, other people at the UG/UMCG.

Table 27.1. Percentage and Mean (SD) of 'How helpful was talking to someone?' per gender

	Male	Female
Not helpful at all	4.8	4.9
Hardly helpful	14.3	9.1
Somewhat helpful	38.1	43.4
Quite helpful	36.5	32.2
Extremely helpful	6.3	10.5
How helpful was/is it to talk about your problems with the person(s) you indicated you talk(ed) to in the previous question? <sup>1</sup> (Mean (SD))	3.25 (0.95)	3.34 (0.96)

<sup>1</sup> Note: answers were given on a scale of 1 (not helpful at all) to 5 (extremely helpful).

Table 28.1. Percentage of PhD students who engage in structural activities in addition to their PhD, per gender

	Male	Female
No additional activities	69.5	62.9
I have another job	13.0	15.4
I am on the board of an organization or actively involved in an organization	7.0	10.4
I am actively involved in a political party	1.5	0.3
I do voluntary work	2.5	7.4
I am an informal caregiver for a relative or other person	1.0	3.3
I am a professional / semi-professional athlete or musician	3.0	2.7
Other	4.5	4.7

Table 29.1. Percentage of working hours and vacation, per gender

	Male		Female	
	Yes	No	Yes	No
Do you generally work more hours than your contract requires?	52.0	31.5	47.3	39.9
On average, how many hours do you work extra a week (M, SD)	15.41 (14.28)		11.83 (12.23)	
Does working overtime cause you extra stress (answered by respondents who do work more hours)?	53.4	41.7	51.9	44.3
Do you generally take off all the vacation/leave days you are entitled to each year?	66.0	23.5	81.0	11.0
Does not taking off the vacation/leave days cause you extra stress (answered by respondents who do not take vacation/leave days)?	61.7	36.2	62.2	na/37.8

Table 30.1. Mean (SD) of respondents' work-life balance, per gender

	Male	Female
I have difficulties balancing my work and non-work activities	3.22 (1.12)	3.15 (1.13)
The demands of my work interfere with my life away from work	3.19 (1.12)	3.14 (1.15)
The amount of time my work takes up makes it difficult to fulfil other interests	3.20 (1.13)	3.06 (1.16)
Things that I want to do at home do not get done because of work demands	3.04 (1.07)	3.00 (1.18)
My work produces strain that makes it difficult to fulfil other responsibilities and duties	3.07 (1.12)	2.98 (1.16)
Due to my work, I have to make changes to my plans for activities outside of work	3.42 (1.06)	3.33 (1.07)
Overall, I believe that my work and non-work life are balanced	2.97 (1.11)	3.08 (1.09)

*Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).*

## Appendix II – Tables per Nationality

Table 1.2 Percentage of male and female survey respondents, per nationality

Nationality	Male	Female
Dutch	31.0	67.8
Nationality from EEA country (non-Dutch)	33.6	65.5
Other nationality	46.4	51.4

Table 3.2. Percentage of respondents in graduate schools, per nationality

Nationality	GSBSS	GSCF	GSEB	GSH	GSL	GSMS	GSP	GSSE	GSSS	GSTRS
Dutch	17.6	1.2	5.3	8.2	4.5	33.9	1.6	20.4	3.7	1.6
Nationality from EEA country (non-Dutch)	14.2	2.7	7.1	10.6	1.8	19.5	0.0	33.6	3.5	1.8
Other nationality	8.7	4.3	3.3	8.2	0.5	32.1	1.1	34.2	2.7	3.3

Table 4.2. Percentage of respondents' type of contract, per nationality

Nationality	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG	MD/PHD	End of contract	Other
Dutch	62.9	7.3	15.9	4.5	2.4	5.7
Nationality from EEA country (non-Dutch)	54.9	4.4	28.3	3.5	3.5	4.4
Other nationality	34.2	6.0	50.0	1.1	2.7	6.0

Table 5.2. Percentage of allotted time period for the PhD project, per nationality

Nationality	< 3 Years	3 Years	4 Years	> 4 Years	Other	Don't know
Dutch	5.7	10.6	64.5	9.4	6.5	3.3
Nationality from EEA country (non-Dutch)	4.4	5.3	79.6	5.3	1.8	3.5
Other nationality	2.7	11.5	79.2	4.4	1.1	1.1

Table 6.2. Percentage of full time/part time, per nationality

Nationality	Full-time	Part-time	Other/don't know
Dutch	78.5	17.3	4.2
Nationality from EEA country (non-Dutch)	87.3	5.9	6.9
Other nationality	82.5	4.8	12.7



Table 7.2 Percentage of current year of PhD, per nationality

Nationality	First year	Second year	Third year	Fourth year	Fifth year	Over five years
Dutch	27.5	22.5	22.1	18.4	5.3	4.1
Nationality from EEA country (non-Dutch)	33.6	20.4	21.2	18.6	3.6	2.7
Other nationality	34.2	21.2	19.6	15.8	7.6	1.6

Table 7.2.1. Percentage of junior and senior PhD students, per nationality

Nationality	Junior	Senior
Dutch	50.0	50.0
Nationality from EEA country (non-Dutch)	54.0	46.0
Other nationality	55.4	44.6

Table 8.2. Mean (SD) of satisfaction with performance, project characteristics, and confidence, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Overall, I am satisfied with how I am performing in my PhD.	3.49 (0.97)	3.38 (1.05)	3.49 (1.04)
Overall, my primary supervisor (promotor) is satisfied with how I am performing.	4.07 (0.67)	3.95 (0.66)	3.92 (0.78)
<b>Overall, my daily supervisor is satisfied with how I am performing.**</b>	<b>4.11 (0.69)</b>	<b>3.95 (0.72)</b>	<b>3.84 (0.86)</b>
Overall, I know what my supervisors expect of me	3.80 (0.84)	3.62 (1.01)	3.76 (0.97)
The workload in my PhD is high.	3.86 (0.86)	3.94 (0.93)	3.83 (0.95)
The complexity of my PhD is high.	3.97 (0.77)	4.13 (0.81)	4.02 (0.86)
I am confident that I will, eventually, finish my PhD.	4.19 (0.85)	4.16 (0.80)	4.33 (0.76)
<b>I am confident that I will be able to submit my thesis to the assessment committee before the end of my contract.***</b>	<b>2.98 (1.25)</b>	<b>2.94 (1.21)</b>	<b>3.45 (1.24)</b>
<b>I am confident that I will find a suitable and interesting job after I have finished my PhD.**</b>	<b>3.89 (0.98)</b>	<b>3.57 (1.06)</b>	<b>3.54 (1.13)</b>

Note: Answers were given on a scale of 1 (completely disagree) to 5 (completely agree). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 9.2. Progress of the PhD students with their thesis; percentage of respondents per statement, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Yes, I think I will be able to finish my PhD in time	38.4	38.1	39.9
No, I have fallen behind but I still think I can finish in time	20.0	19.5	29.0
No, I have fallen behind and I don't think I will be able to finish in time	18.4	17.7	12.0
I was unable to finish in time and am currently on an extension	5.3	6.2	8.2
I was unable to finish in time and am currently finishing my thesis in my own time	3.7	1.8	1.6
I have already defended my thesis or sent the manuscript to the assessment committee	0.8	-	-
I don't know/other	13.4	16.8	9.3

Table 10.2. Mean (SD) of consideration of quitting, and satisfaction with the trajectory and the supervision, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
<b>Have you ever considered quitting your PhD project? <sup>1*</sup></b>	<b>3.90 (1.28)</b>	<b>3.67 (1.45)</b>	<b>4.10 (1.24)</b>
How satisfied are you with your PhD trajectory so far? <sup>2</sup>	3.58 (0.91)	3.42 (0.93)	3.43 (0.92)
How satisfied are you with the supervision you receive? <sup>2</sup>	3.91 (0.95)	3.78 (1.08)	3.87 (1.10)

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = yes, very often, 5 = no, never),

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 11.2 Mean (SD) of frequency and satisfaction with (online) supervision, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Frequency of (online) meetings with daily supervisor <sup>1</sup>	2.81 (1.04)	2.65 (1.09)	2.75 (1.19)
Frequency of (online) meetings with primary supervisor <sup>1</sup>	3.46 (1.06)	3.32 (1.22)	3.33 (1.13)
Satisfaction meetings with daily supervisor <sup>2</sup>	4.13 (0.90)	4.21 (0.98)	3.96 (1.19)
Satisfaction meetings with primary supervisor <sup>2</sup>	3.91 (0.94)	3.93 (1.00)	3.90 (1.21)

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = several times a week; 2 = about once a week; 3 = several times a month; 4 = about once a month; 5 = less than once a month).

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Table 12.2. Mean (SD) of regarding the atmosphere within the department, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
<b>Formal relationships*</b>	<b>3.48 (0.73)</b>	<b>3.35 (0.73)</b>	<b>3.32 (0.76)</b>
Informal relationships	3.24 (0.92)	3.15 (1.04)	3.05 (0.90)
Sense of belonging	3.73 (0.79)	3.64 (0.85)	3.60 (0.79)

Note: On the scale from 1 to 5, a higher score indicates a stronger and more positive sense of (in)formal relationships between colleagues. Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 13.2. Mean (SD) of impact of Covid-19 on the ability to engage in aspects of the PhD project, per nationality

What impact has COVID-19 had on the ability to engage in this work:	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Data collection	2.14 (0.84)	2.16 (0.99)	2.34 (0.95)
Data analysis	2.70 (0.81)	2.68 (0.81)	2.68 (0.84)
Writing	2.85 (0.89)	2.74 (0.82)	2.73 (0.92)
<b>Discussing ideas and findings with colleagues and peers**</b>	<b>1.84 (0.85)</b>	<b>1.92 (0.93)</b>	<b>2.13 (0.93)</b>
Dissemination and sharing research finding with stakeholders and other	1.98 (0.79)	2.17 (1.0)	2.19 (0.95)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 14.2. Mean (SD) of impact of Covid-19 on other aspects, per nationality

What impact did COVID-19 have on your:	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Motivation to work on PhD project	2.47 (0.77)	2.36 (0.73)	2.48 (0.96)
Progress of PhD projects	2.25 (0.86)	2.17 (0.85)	2.24 (0.95)
<b>Future career prospects**</b>	<b>2.83 (0.58)</b>	<b>2.56 (0.62)</b>	<b>2.63 (0.95)</b>
Mental health	2.28 (0.79)	2.15 (0.75)	2.20 (0.90)
Work-life balance	2.61 (1.02)	2.59 (1.09)	2.44 (1.03)
Contact with daily supervisor/promotor	2.50 (0.75)	2.51 (0.71)	2.51 (0.84)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 15.2. Percentage of effects attributed to COVID-19 pandemic, per nationality

Due to the COVID-19 pandemic I currently... (multiple answers are possible)	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
feel anxious in social situations	12.7	25.7	31.0
feel overwhelmed in bigger groups of people	25.7	37.2	37.0
feel lonely	13.5	20.4	27.7
feel depressed	7.8	10.6	23.9
do not feel a sense of belonging to my research group	24.5	31.0	28.8
Other – please explain	18.4	14.2	15.8

Table 16.2. Mean (SD) of mental health indicators, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
<b>WHO score (0-100)<sup>1</sup> ***</b>	<b>43.97 (18.69)</b>	<b>51.64 (21.19)</b>	<b>51.93 (22.04)</b>
GHQ-12 (0-36) <sup>2</sup>	13.89 (5.94)	15.68 (6.79)	15.27 (7.28)
<b>Mental health, current<sup>3*</sup></b>	<b>6.77 (1.52)</b>	<b>6.23 (2.12)</b>	<b>6.30 (2.29)</b>
<b>Mental health, during-COVID-19 pandemic<sup>3**</sup></b>	<b>5.89 (1.83)</b>	<b>5.34 (2.30)</b>	<b>5.17 (2.31)</b>
Mental health during Bachelor's / Master's <sup>3</sup>	7.46 (1.42)	7.43 (1.63)	7.39 (1.68)
<b>Do you feel happy in general? <sup>4***</sup></b>	<b>7.09 (1.39)</b>	<b>6.29 (2.10)</b>	<b>6.17 (2.15)</b>
<b>Resilience*</b>	<b>3.38 (0.78)</b>	<b>3.29 (0.80)</b>	<b>3.15 (0.78)</b>

<sup>1</sup> Answers were given on a scale of 0 = all the time to 5=at no time. A sum score of the 5 WHO items was calculated and multiplied by 4. Note that the 2022 WHO-score cannot be compared to the 2020 WHO score, since different answer categories were used.

<sup>2</sup> Answers were given on a scale of 0 to 3. A sum score of the 12 GHQ items was calculated.

<sup>3</sup> Answers were given on a scale of 0 = extremely poor to 10 = extremely good.

<sup>4</sup> An answer was given on a scale of 0 = minimum score to 10 = maximum score.

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 17.2. Percentage of 'In your experience, is doing a PhD affecting your mental health?', per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
No	2.9	4.4	7.1
Overall, doing a PhD has a large negative effect on my mental health	9.8	15.9	10.3
Overall, doing a PhD has a small negative effect on my mental health	14.3	14.2	12.0
Sometimes doing a PhD has a negative effect on my mental health, sometimes a positive effect	41.6	42.5	45.7
Overall, doing a PhD has a small positive effect on my mental health	18.8	8.0	10.9
Overall, doing a PhD has a large positive effect on my mental health	9.4	8.0	12.0
I don't know	3.3	7.1	2.2

Table 18.2. Percentages of aspects of doing a PhD trajectory that negatively affect mental health, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
High workload	42.0	42.5	36.4
Problems with work-life balance	37.6	46.0	38.0
Insecurities about future career	17.1	32.7	41.8
Insecurities about own capabilities	46.1	52.2	42.9
Not being able to finish in time or doubts about being able to finish in time	32.7	40.7	35.9
Not achieving good results or doubts about achieving good results	31.4	41.6	37.0
Issues due to practical setbacks in the project	28.2	30.1	21.2
Publication pressure	20.0	36.3	35.9
Problems with supervisors	14.3	20.4	14.1
Problems with colleagues	4.9	7.1	7.6
High level of competition in academia	16.3	28.3	23.9
Unclear expectations	18.0	31.0	25.0
Procrastination, lack of motivation	31.4	46.0	34.2
Other	6.1	8.8	7.6

Table 19.2. Mean (SD) of the different factors of burnout and engagement, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Burn out: Exhaustion	3.58 (1.11)	3.85 (1.36)	3.82 (1.16)
<b>Burn out: Cynicism *</b>	<b>3.47 (1.49)</b>	<b>3.90 (1.48)</b>	<b>3.72 (1.45)</b>
Burn out: Professional efficacy	5.04 (0.73)	4.86 (0.75)	5.02 (0.75)
<b>Work engagement: Dedication *</b>	<b>4.72 (0.96)</b>	<b>4.40 (1.04)</b>	<b>4.58 (1.14)</b>
<b>Work engagement: Vigour *</b>	<b>3.97 (1.00)</b>	<b>3.65 (1.03)</b>	<b>3.99 (1.07)</b>

Note: answers were given on a scale of 1 (never) to 7 (all the time). Significant differences are indicated in bold.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 20.2. Percentage of answers to the question: 'Do you currently worry about your career?', per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Never	15.5	3.5	4.3
Rarely	23.3	16.8	12.5
Sometimes	41.2	38.1	38.0
Often	17.1	28.3	27.2
All of the time	2.9	13.3	17.9

Table 21.2. Percentage of types of career worries, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Not knowing what kind of career I want	34.3	48.7	27.2
Being unsure whether I am good enough for the kind of job I want	22.4	33.6	46.2
Having to move to another place for a new job	21.6	32.7	30.4
Feeling unprepared for the job I want	15.5	23.9	31.0
The high competition to obtain the job I want	29.4	42.5	45.1
Having to start a new job while my PhD thesis is not yet finished	19.6	22.1	20.7
The work-life balance in my future job	21.6	31.9	23.9
Being insecure about my skills in writing application letters and/or job interviews	6.9	19.5	25.0
Other	8.2	15.0	12.5

Table 23.2. Mean (SD) of statements about talking about mental health problems, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
If I were to experience mental health problems, I would know who I could talk to at the University/UMCG	3.18 (1.23)	3.15 (1.36)	3.24 (1.28)
If I were to experience mental health problems, I would like to talk about it with someone at the University/UMCG	3.09 (1.08)	3.33 (1.07)	3.61 (1.05)
If I were to experience mental health problems, I would talk about this with my primary supervisor	3.25 (1.20)	2.91 (1.28)	3.39 (1.32)
My primary supervisor would act supportively if I told him/her I am experiencing mental health problems	3.98 (0.99)	4.03 (1.04)	4.02 (1.10)
If I were to experience mental health problems, I would talk about this with my daily supervisor	3.59 (1.21)	3.47 (1.26)	3.46 (1.34)
My daily supervisor would act supportively if I told him/her I am experiencing mental health problems	4.20 (.90)	4.10 (1.11)	4.04 (1.11)
I would talk about this with a professional outside the University/UMCG.	3.84 (1.02)	3.98 (0.98)	3.96 (0.93)
How helpful was/is it to talk about your problems with the person(s) you indicated you talk(ed) to in the previous question?	3.40 (0.86)	3.30 (1.03)	3.21 (1.02)

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).

Table 24.2. Percentage of PhD students that knows about different forms of PhD support, per nationality

Before filling out this survey, did you know that as a PhD student you have access to...	Dutch		Nationality from EEA country (non-Dutch)		Other nationality	
	Yes	No	Yes	No	Yes	No
the PhD Support website	62.4	37.1	60.2	39.8	64.1	35.9
Courses and workshops (through PhD support)	93.1	6.9	83.2	16.8	86.3	13.7
Career Perspectives series	91.8	8.2	90.2	9.8	84.6	15.4
individual counseling (through PhD support)	58.6	41.4	53.1	46.9	54.6	45.4
PhD psychologists	54.1	45.9	56.3	43.8	45.3	54.7
an independent ombuds person (onafhankelijke ombuds functionaris)	37.7	62.3	33.6	66.4	23.9	76.1
a confidential advisor (vertrouwenspersoon)	86.1	13.9	70.8	29.2	57.1	42.9
PhD mentor	41.7	58.3	38.1	61.9	42.6	57.4

Table 25.2. Percentage of PhD students who are experiencing or have experienced mental health problems during their PhD, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
No, I have never experienced mental health problems that affected my work	51.0	35.4	39.1
Yes, I have experienced mental health problems that affected my work	26.5	36.3	32.1
Yes, I am currently experiencing mental health problems that affect my work	19.2	20.4	22.8
Prefer not to say	3.3	8.0	6.0

Table 26.2. Percentage of PhD students who have talked about their mental health problems with someone at the UG/UMCG, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
I have never talked to anyone at the UG/UMCG about my problems	8.6	15.0	13.6
I have talked to my supervisor	27.3	22.1	26.1
I have talked to a colleague / colleagues	21.6	25.7	26.1
I have talked to the psychologist for PhD students	5.7	8.8	12.0
I have talked to the confidential advisor	4.5	5.8	6.0
I have talked to my PhD coordinator or mentor	4.5	2.7	3.8
I have talked to someone from Student Support or Career Services	4.9	8.0	2.7
I have talked to someone from AMD (Health, Safety and Environment Service), e.g. an occupational health worker	7.8	4.4	3.8
Yes, to a PhD counselor (available for FSE and UMCG)	0.4	4.4	3.3
Other	4.1	6.2	3.8

Table 27.2. Percentage and Mean (SD) of 'How helpful was talking to someone?', per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Not helpful at all	1.1	4.3	9.2
Hardly helpful	11.5	15.2	7.9
Somewhat helpful	42.5	39.1	43.4
Quite helpful	35.6	28.3	31.6
Extremely helpful	9.2	13.0	7.9
How helpful was/is it to talk about your problems with the person(s) you indicated you talk(ed) to in the previous question? <sup>1</sup> (Mean (SD))	3.40 (0.86)	3.30 (1.03)	3.00 (1.00)

<sup>1</sup> Note: answers were given on a scale of 1 (not helpful at all) to 5 (extremely helpful).



Table 28.2. Percentage of PhD students who engage in structural activities in addition to their PhD, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
No additional activities	56.3	69.9	75.0
I have another job	22.0	10.6	6.0
I am on the board of an organization or actively involved in an organization	9.0	12.4	7.1
I am actively involved in a political party	1.2	-	0.5
I do voluntary work	6.9	2.7	5.4
I am an informal caregiver for a relative or other person	3.3	1.8	1.6
I am a professional / semi-professional athlete or musician	3.7	2.7	2.2
Other <sup>1</sup>	4.9	2.7	6.0

<sup>1</sup>Other additional activities are mainly being self-employed, committee work, parenting or additional job/activity at university.

Table 29.2. Percentage of working hours and vacation, per nationality

	Dutch		Nationality from EEA country (non-Dutch)		Other nationality	
	Yes	No	Yes	No	Yes	No
Do you generally work more hours than your contract requires?	46.5	41.6	51.3	35.4	50.8	30.6
On average, how many hours do you work extra a week (M, SD)	10.16 (10.38)		14.78 (15.38)		16.40 (14.11)	
Does working overtime cause you extra stress (answered by respondents who do work more hours)?	23.7	20.4	29.2	18.6	26.6	22.3
Do you generally take off all the vacation/leave days you are entitled to each year?	85.3	10.6	75.2	13.3	61.2	24.6
Does not taking off the vacation/leave days cause you extra stress (answered by respondents who do not take vacation/leave days)?	61.5	38.5	66.7	33.3	60.0	37.8

Table 30.2. Mean (SD) of respondents' work-life balance, per nationality

	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
I have difficulties balancing my work and non-work activities	3.11 (1.08)	3.36 (1.13)	3.15 (1.15)
The demands of my work interfere with my life away from work	3.10 (1.14)	3.34 (1.24)	3.13 (1.06)
The amount of time my work takes up makes it difficult to fulfil other interests	3.00 (1.16)	3.23 (1.20)	3.17 (1.08)
Things that I want to do at home do not get done because of work demands	2.92 (1.14)	3.19 (1.15)	3.01 (1.10)
My work produces strain that makes it difficult to fulfil other responsibilities and duties	2.92 (1.12)	3.21 (1.17)	3.02 (1.15)
Due to my work, I have to make changes to my plans for activities outside of work	3.25 (1.07)	3.50 (1.05)	3.39 (1.08)
<b>Overall, I believe that my work and non-work life are balanced*</b>	<b>3.17 (1.07)</b>	<b>2.84 (1.12)</b>	<b>2.99 (1.12)</b>

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

## Appendix III – Tables per Graduate School

Table 1.3. Percentage of male and female PhD students, per graduate school

Graduate school	Male	Female
BSS	19.5	79.2
Hum	30.4	69.6
MS	26.7	70.9
SE	52.3	47.1

Table 2.3. Percentage of respondents' nationalities, per graduate school

Graduate school	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
BSS	55.8	20.8	20.8
Hum	42.6	25.5	31.9
MS	50.3	13.3	35.8
SE	32.7	24.8	41.2

Table 4.3. Percentage of respondents' type of contract, per graduate school

Graduate school	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG	MD/PHD	End of contract	Other
BSS	46.8	14.3	26.0	-	2.6	10.4
Hum	36.2	6.4	38.3	-	2.1	12.8
MS	57.6	5.5	20.6	10.3	3.0	3.0
SE	52.9	5.2	34.0	-	3.9	3.3

Table 5.3. Percentage of allotted time period for the PhD project, per graduate school

Graduate school	< 3 Years	3 Years	4 Years	> 4 Years	Other	Don't know
BSS	0	5.2	63.6	20.8	6.5	3.9
Hum	2.1	6.4	72.3	8.5	2.1	8.5
MS	10.9	20.0	58.2	3.6	6.1	1.2
SE	1.3	2.6	89.5	3.9	1.3	1.3

Table 6.3. Percentage of full time/part time, per graduate school

Graduate school	Full-time	Part-time	Other/don't know
BSS	62.1	25.8	12.1
Hum	86.8	7.9	5.3
MS	77.9	15.4	6.7
SE	88.5	2.9	8.6

Table 7.3. Percentage of current year of PhD, per graduate school

Graduate school	First year	Second year	Third year	Fourth year	Fifth year	Over five years
BSS	31.6	15.8	17.1	19.7	9.2	6.6
Hum	31.9	23.4	21.3	19.1	4.3	0.0
MS	32.7	20.6	25.5	13.3	4.2	3.6
SE	28.1	22.2	19.6	21.6	5.9	2.6

Table 7.3.1. Percentage of junior and senior respondents, per graduate school

Graduate school	Junior	Senior
BSS	47.4	52.6
Hum	55.3	44.7
MS	53.3	46.7
SE	50.3	49.7

Table 8.3. Mean (SD) of satisfaction with performance, project characteristics, and confidence, per graduate school

	BSS	Hum	MS	SE
<b>Overall, I am satisfied with how I am performing in my PhD.**</b>	<b>3.75 (0.90)</b>	<b>3.72 (0.96)</b>	<b>3.53 (0.92)</b>	<b>3.32 (1.08)</b>
Overall, my primary supervisor (promotor) is satisfied with how I am performing.	4.13 (0.73)	3.93 (0.90)	4.03 (0.64)	3.96 (0.69)
Overall, my daily supervisor is satisfied with how I am performing.	4.16 (0.73)	4.00 (0.96)	3.98 (0.71)	3.91 (0.72)
Overall, I know what my supervisors expect of me.	4.00 (0.76)	3.79 (1.00)	3.77 (0.86)	3.67 (0.96)
The workload in my PhD is high.	3.73 (0.84)	3.83 (0.82)	3.87 (0.97)	3.92 (0.95)
The complexity of my PhD is high.	3.99 (0.80)	3.89 (0.82)	3.94 (0.81)	4.16 (0.78)
<b>I am confident that I will, eventually, finish my PhD.*</b>	<b>4.37 (0.73)</b>	<b>4.48 (0.72)</b>	<b>4.16 (0.78)</b>	<b>4.13 (0.85)</b>
I am confident that I will be able to submit my thesis to the assessment committee before the end of my contract.	3.21 (1.34)	3.25 (1.14)	3.12 (1.28)	3.01 (1.24)
<b>I am confident that I will find a suitable and interesting job after I have finished my PhD.***</b>	<b>3.81 (0.96)</b>	<b>3.29 (1.23)</b>	<b>3.96 (0.93)</b>	<b>3.62 (1.03)</b>

Note: Answers were given on a scale of 1 (completely disagree) to 5 (completely agree). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 9.3. Progress of the PhD students with their thesis; percentage of respondents per statement, per graduate school

	BSS	Hum	MS	SE
Yes, I think I will be able to finish my PhD in time	42.9	36.2	40.6	35.9
No, I have fallen behind but I still think I can finish in time	19.5	29.8	22.4	20.9
No, I have fallen behind and I don't think I will be able to finish in time	16.9	10.6	16.4	18.3
I was unable to finish in time and am currently on an extension	5.2	6.4	6.7	6.5
I was unable to finish in time and am currently finishing my thesis in my own time	3.9	-	2.4	3.9
I have already defended my thesis or sent the manuscript to the assessment committee	-	-	1.2	-
I don't know /other	11.7	17.0	10.3	14.4

Table 10.3. Mean (SD) of consideration of quitting, and satisfaction with the trajectory and the supervision, per graduate school

	BSS	Hum	MS	SE
Have you ever considered quitting your PhD project? <sup>1</sup>	4.14 (1.21)	4.19 (1.15)	4.00 (1.28)	3.83 (1.43)
<b>How satisfied are you with your PhD trajectory so far? <sup>2***</sup></b>	<b>3.84 (0.84)</b>	<b>3.66 (0.94)</b>	<b>3.55 (0.88)</b>	<b>3.28 (0.91)</b>
How satisfied are you with the supervision you receive? <sup>2</sup>	4.08 (0.93)	4.00 (0.98)	3.80 (1.09)	3.84 (1.00)

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = yes, very often, 5 = no, never),

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 11.3. Mean (SD) of frequency and satisfaction with (online) supervision, per graduate school

	BSS	Hum	MS	SE
<b>Frequency of (online) meetings with daily supervisor<sup>1***</sup></b>	<b>2.87 (0.92)</b>	<b>3.48 (1.05)</b>	<b>2.42 (1.01)</b>	<b>2.54 (1.09)</b>
<b>Frequency of (online) meetings with primary supervisor<sup>1***</sup></b>	<b>3.61 (1.04)</b>	<b>3.96 (0.97)</b>	<b>3.08 (1.06)</b>	<b>3.14 (1.16)</b>
Satisfaction meetings with daily supervisor <sup>2</sup>	4.21 (0.93)	4.24 (1.23)	4.03 (0.99)	4.00 (1.08)
Satisfaction meetings with primary supervisor <sup>2</sup>	4.06 (0.95)	4.02 (1.13)	3.87 (1.05)	3.84 (1.03)

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = several times a week; 2 = about once a week; 3 = several times a month; 4 = about once a month; 5 = less than once a month).

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Table 12.3. Mean (SD) of regarding the atmosphere within the department, per graduate school

	BSS	Hum	MS	SE
<b>Formal relationships**</b>	<b>3.22 (0.83)</b>	<b>3.30 (0.81)</b>	<b>3.54 (0.74)</b>	<b>3.43 (0.65)</b>
<b>Informal relationships*</b>	<b>2.92 (0.91)</b>	<b>2.98 (1.10)</b>	<b>3.25 (0.88)</b>	<b>3.28 (0.95)</b>
Sense of belonging	3.55 (0.82)	3.79 (0.74)	3.69 (0.84)	3.68 (0.80)

Note: On the scale from 1 to 5, a higher score indicates a stronger and more positive sense of (in)formal relationships between colleagues. Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 13.3. Mean (SD) of impact of Covid-19 on the ability to engage in aspects of the PhD project, per graduate school

What impact has COVID-19 had on the ability to engage in this work:	BSS	Hum	MS	SE
Data collection	2.23 (0.99)	2.05 (0.88)	2.07 (0.85)	2.20 (0.86)
Data analysis	2.78 (0.78)	2.55 (0.69)	2.78 (0.79)	2.58 (0.83)
Writing	2.78 (0.80)	2.60 (0.83)	2.92 (0.91)	2.78 (0.87)
Discussing ideas and findings with colleagues and peers	2.07 (0.97)	1.72 (0.86)	2.06 (0.83)	1.93 (0.90)
Dissemination and sharing research finding with stakeholders and other	2.28 (0.96)	1.97 (0.97)	2.07 (0.82)	2.03 (0.86)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive).

Table 14.3. Mean (SD) of impact of Covid-19 on other aspects, per graduate school

What impact did COVID-19 have on your:	BSS	Hum	MS	SE
<b>Motivation to work on PhD project**</b>	<b>2.44 (0.75)</b>	<b>2.17 (0.80)</b>	<b>2.63 (0.81)</b>	<b>2.44 (0.79)</b>
Progress of PhD projects	2.30 (0.82)	2.10 (0.66)	2.31 (0.95)	2.12 (0.83)
<b>Future career prospects**</b>	<b>2.75 (0.56)</b>	<b>2.46 (0.78)</b>	<b>2.82 (0.68)</b>	<b>2.57 (0.82)</b>
<b>Mental health *</b>	<b>2.25 (0.77)</b>	<b>2.10 (0.73)</b>	<b>2.40 (0.83)</b>	<b>2.15 (0.81)</b>
<b>Work-life balance *</b>	<b>2.59 (1.06)</b>	<b>2.24 (0.79)</b>	<b>2.76 (1.06)</b>	<b>2.51 (1.01)</b>
Contact with daily supervisor/promotor	2.48 (0.67)	2.56 (0.81)	2.52 (0.78)	2.54 (0.78)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 15.3. Percentage of effects attributed to COVID-19 pandemic, per graduate school

Due to the COVID-19 pandemic I currently... (multiple answers are possible)	BSS	Hum	MS	SE
feel anxious in social situations	18.2	25.5	19.4	21.6
feel overwhelmed in bigger groups of people	29.9	27.7	36.4	27.5
feel lonely	20.8	27.7	13.9	20.9
feel depressed	14.3	12.8	12.1	13.7
do not feel a sense of belonging to my research group	24.7	27.7	20.6	28.1
Other – please explain	20.8	17.0	13.3	14.4

Table 16.3. Mean (SD) of mental health indicators, per graduate school.

	BSS	Hum	MS	SE
<b>WHO score (0-100)<sup>1</sup> *</b>	<b>43.38 (18.66)</b>	<b>48.51 (22.47)</b>	<b>45.14 (19.26)</b>	<b>51.11 (21.72)</b>
GHQ-12 (0-36) <sup>2</sup>	13.35 (6.06)	14.13 (6.65)	13.93 (6.54)	15.56 (7.05)
<b>Mental health, current<sup>3**</sup></b>	<b>6.74 (1.67)</b>	<b>6.36 (2.19)</b>	<b>6.76 (1.79)</b>	<b>6.27 (2.13)</b>
Mental health, during-COVID-19 pandemic <sup>3</sup>	5.69 (1.90)	4.87 (2.33)	5.99 (1.80)	5.38 (2.33)
Mental health during Bachelor's / Master's <sup>3</sup>	7.25 (1.49)	7.38 (1.60)	7.41 (1.45)	7.51 (1.71)
<b>Do you feel happy in general?<sup>4**</sup></b>	<b>6.95 (1.59)</b>	<b>6.53 (1.91)</b>	<b>6.87 (1.72)</b>	<b>6.22 (2.15)</b>
<b>Resilience *</b>	<b>3.33 (0.77)</b>	<b>3.14 (0.83)</b>	<b>3.39 (0.81)</b>	<b>3.17 (0.73)</b>

<sup>1</sup> Answers were given on a scale of 0 = all the time to 5=at no time. A sum score of the 5 WHO items was calculated and multiplied by 4. Note that the 2022 WHO-score cannot be compared to the 2020 WHO score, since different answer categories were used.

<sup>2</sup> Answers were given on a scale of 0 to 3. A sum score of the 12 GHQ items was calculated.

<sup>3</sup> Answers were given on a scale of 0 = extremely poor to 10 = extremely good.

<sup>4</sup> An answer was given on a scale of 0 = minimum score to 10 = maximum score.

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 17.3. Percentage of 'In your experience, is doing a PhD affecting your mental health?', per graduate school

	BSS	Hum	MS	SE
No	2.6	2.1	3.6	7.2
Overall, doing a PhD has a large negative effect on my mental health	7.8	12.8	10.3	14.4
Overall, doing a PhD has a small negative effect on my mental health	11.7	12.8	12.1	15.0
Sometimes doing a PhD has a negative effect on my mental health, sometimes a positive effect	41.6	31.9	43.0	43.8
Overall, doing a PhD has a small positive effect on my mental health	20.8	21.3	15.8	9.8
Overall, doing a PhD has a large positive effect on my mental health	11.7	17.0	12.7	5.2
I don't know	3.9	2.1	2.4	4.6

Table 18.3. Percentages of aspects of doing a PhD trajectory that negatively affect mental health, per graduate school.

	BSS	Hum	MS	SE
High workload	33.8	31.9	40.0	45.8
Problems with work-life balance	31.2	29.8	40.0	43.1
Insecurities about future career	22.1	36.2	28.5	29.4
Insecurities about own capabilities	41.6	42.6	40.6	50.3
Not being able to finish in time or doubts about being able to finish in time	32.5	23.4	35.8	39.2
Not achieving good results or doubts about achieving good results	18.2	27.7	30.3	43.1
Issues due to practical setbacks in the project	29.9	23.4	28.5	26.1
Publication pressure	24.7	14.9	27.3	35.3
Problems with supervisors	13.0	10.6	15.8	15.7
Problems with colleagues	2.6	-	8.5	9.2
High level of competition in academia	16.9	23.4	19.4	24.8
Unclear expectations	18.2	21.3	17.0	24.8
Procrastination, lack of motivation	28.6	29.8	33.3	39.9
Other	5.2	8.5	4.2	6.5

Table 19.3. Mean (SD) of the different factors of burnout and engagement, per graduate school

	BSS	Hum	MS	SE
<b>Burn out: Exhaustion *</b>	<b>3.38 (1.07)</b>	<b>3.44 (1.23)</b>	<b>3.69 (1.24)</b>	<b>3.89 (1.21)</b>
Burn out: Cynicism	3.34 (1.39)	3.55 (1.40)	3.61 (1.60)	3.86 (1.50)
<b>Burn out: Professional efficacy *</b>	<b>5.07 (0.68)</b>	<b>5.17 (0.68)</b>	<b>5.05 (0.81)</b>	<b>4.86 (0.72)</b>
<b>Work engagement: Dedication **</b>	<b>4.75 (1.02)</b>	<b>5.00 (1.07)</b>	<b>4.64 (1.10)</b>	<b>4.40 (1.02)</b>
Work engagement: Vigour	4.06 (1.02)	4.18 (1.07)	3.98 (1.05)	3.77 (1.03)

Note: answers were given on a scale of 1 (never) to 7 (all the time). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 20.3. Percentage of answers to the question: 'Do you currently worry about your career?', per graduate school

	BSS	Hum	MS	SE
Never	15.6	6.4	6.7	9.8
Rarely	32.5	10.6	18.2	16.3
Sometimes	33.8	27.7	43.0	41.2
Often	15.6	38.3	23.0	19.6
All of the time	2.6	17.0	9.1	13.1



Table 21.3. Percentage of types of career worries, per graduate school

	BSS	Hum	MS	SE
Not knowing what kind of career I want	31.2	25.5	36.4	38.6
Being unsure whether I am good enough for the kind of job I want	22.1	23.4	38.8	37.3
Having to move to another place for a new job	26.0	40.4	22.4	28.1
Feeling unprepared for the job I want	16.9	17.0	24.8	24.2
The high competition to obtain the job I want	29.9	57.4	38.8	32.7
Having to start a new job while my PhD thesis is not yet finished	15.6	23.4	18.8	19.0
The work-life balance in my future job	18.2	25.5	30.3	15.0
Being insecure about my skills in writing application letters and/or job interviews	11.7	17.0	14.5	22.2
Other	11.7	10.6	5.5	10.5

Table 23.3. Mean (SD) of statements about talking about mental health problems, per graduate school

	BSS	Hum	MS	SE
If I were to experience mental health problems, I would know who I could talk to at the University/UMCG	3.24 (1.13)	3.20 (1.38)	3.06 (1.27)	3.23 (1.24)
If I were to experience mental health problems, I would like to talk about it with someone at the University/UMCG	3.10 (1.06)	3.42 (1.14)	3.09 (1.15)	3.44 (0.96)
If I were to experience mental health problems, I would talk about this with my primary supervisor	3.33 (1.34)	3.14 (1.36)	3.24 (1.26)	3.23 (1.19)
My primary supervisor would act supportively if I told him/her I am experiencing mental health problems	4.07 (0.98)	4.10 (1.05)	3.94 (1.04)	3.98 (1.04)
If I were to experience mental health problems, I would talk about this with my daily supervisor	3.85 (1.08)	3.59 (1.40)	3.50 (1.29)	3.37 (1.20)
My daily supervisor would act supportively if I told him/her I am experiencing mental health problems	4.30 (0.99)	4.34 (0.99)	3.98 (1.09)	4.06 (0.98)
I would talk about this with a professional outside the University/UMCG.	3.97 (.78)	3.80 (1.03)	3.92 (0.96)	3.91 (1.03)
How helpful was/is it to talk about your problems with the person(s) you indicated you talk(ed) to in the previous questions.	3.12 (0.91)	3.70 (0.92)	3.17 (0.91)	3.39 (1.01)

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).

Table 24.3. Percentage of PhD students that knows about different forms of PhD support, per graduate school

Before filling out this survey, did you know that as a PhD student you have access to...	BSS		Hum		MS		SE	
	Yes	No	Yes	No	Yes	No	Yes	No
the PhD Support website	58.4	41.6	72.3	27.7	57.3	42.7	68.0	32.0
Courses and workshops (through PhD support)	96.1	3.9	93.3	6.7	91.5	8.5	85.0	15.0
Career Perspectives series	94.8	5.2	95.7	4.3	87.2	12.8	88.2	11.8
individual counseling (through PhD support)	58.4	41.6	60.0	40.0	55.2	44.8	59.5	40.5
PhD psychologists	53.2	46.8	60.9	39.1	42.9	57.1	56.6	43.4
an independent ombuds person (onafhankelijke ombuds functionaris)	35.1	64.9	46.8	53.2	27.4	72.6	26.1	73.9
a confidential advisor (vertrouwenspersoon)	70.1	29.9	87.2	12.8	74.5	25.5	70.6	29.4
PhD mentor	79.2	20.8	69.6	30.4	23.8	76.2	51.6	48.4

Table 25.3. Percentage of PhD students who are experiencing or have experienced mental health problems during their PhD, per graduate school

	BSS	Hum	MS	SE
No, I have never experienced mental health problems that affected my work	44.2	31.9	56.4	40.5
Yes, I have experienced mental health problems that affected my work	32.5	44.7	24.8	29.4
Yes, I am currently experiencing mental health problems that affect my work	22.1	21.3	15.8	21.6
Prefer not to say	1.3	2.1	3.0	8.5

Table 26.3. Percentage of PhD students who have talked about their mental health problems with someone at the UG/UMCG, per graduate school

	BSS	Hum	MS	SE
I have never talked to anyone at the UG/UMCG about my problems	9.1	21.3	7.9	13.1
I have talked to my supervisor	35.1	29.8	21.2	21.6
I have talked to a colleague / colleagues	24.7	29.8	19.4	23.5
I have talked to the psychologist for PhD students	10.4	14.9	3.6	8.5
I have talked to the confidential advisor	1.3	6.4	8.5	5.2
I have talked to my PhD coordinator or mentor	5.2	-	2.4	3.9
I have talked to someone from Student Support or Career Services	5.2	8.5	4.2	5.2
I have talked to someone from AMD (Health, Safety and Environment Service), e.g. an occupational health worker	5.2	8.5	1.8	5.9
Yes, to a PhD counselor (available for FSE and UMCG)	1.3	-	0.6	5.9
Other	1.3	10.6	3.0	3.9

Table 27.3. Percentage and Mean (SD) of 'How helpful was talking to someone?', per graduate school

	BSS	Hum	MS	SE
Not helpful at all	8.8	5.0	1.9	5.3
Hardly helpful	5.9	5.0	20.4	8.8
Somewhat helpful	52.9	15.0	44.4	42.1
Quite helpful	29.4	65.0	25.9	29.8
Extremely helpful	2.9	10.0	7.4	14.0
How helpful was/is it to talk about your problems with the person(s) you indicated you talk(ed) to in the previous question? <sup>1</sup> (Mean (SD))	3.12 (0.91)	3.70 (0.92)	3.17 (0.91)	3.39 (1.01)

<sup>1</sup> Note: answers were given on a scale of 1 (not helpful at all) to 5 (extremely helpful).

Table 28.3. Percentage of PhD students who engage in structural activities in addition to their PhD, per graduate school

	BSS	Hum	MS	SE
No additional activities	58.4	53.2	62.4	79.1
I have another job	23.4	14.9	18.8	4.6
I am on the board of an organization or actively involved in an organization	6.5	12.8	9.7	5.9
I am actively involved in a political party	1.3	2.1	0.6	-
I do voluntary work	6.5	10.6	3.6	5.2
I am an informal caregiver for a relative or other person	3.9	4.3	1.2	-
I am a professional / semi-professional athlete or musician	2.6	4.3	3.6	3.3
Other <sup>1</sup>	2.6	10.6	5.5	3.3

<sup>1</sup>Other additional activities are mainly being self-employed, committee work, parenting or additional job/activity at university.

Table 29.3. Percentage of working hours and vacation, per graduate school

	BSS		Hum		MS		SE	
	Yes	No	Yes	No	Yes	No	Yes	No
Do you generally work more hours than your contract requires?	28.6	50.6	36.2	38.3	63.6	29.7	48.4	35.9
On average, how many hours do you work extra a week (M, SD)	7.79 (5.70)		8.94 (5.90)		13.84 (12.94)		14.48 (14.26)	
Does working overtime cause you extra stress (answered by respondents who do work more hours)?	61.9	38.1	64.7	29.4	44.2	52.9	60.8	33.8
Do you generally take off all the vacation/leave days you are entitled to each year?	81.8	10.4	74.5	8.5	80.6	13.9	73.2	18.3
Does not taking off the vacation/leave days cause you extra stress (answered by respondents who do not take vacation/leave days)?	62.5	37.5	50.0	50.0	52.2	43.5	64.3	35.7

Table 30.3. Mean (SD) of respondents' work-life balance, per graduate school

	BSS	Hum	MS	SE
I have difficulties balancing my work and non-work activities	3.01 (1.03)	3.15 (1.05)	3.07 (1.14)	3.32 (1.10)
The demands of my work interfere with my life away from work	2.99 (1.02)	3.07 (1.12)	3.08 (1.17)	3.28 (1.13)
The amount of time my work takes up makes it difficult to fulfil other interests	2.87 (1.08)	3.22 (1.03)	3.02 (1.16)	3.25 (1.16)
Things that I want to do at home do not get done because of work demands	2.87 (1.10)	3.04 (1.02)	2.88 (1.17)	3.17 (1.13)
<b>My work produces strain that makes it difficult to fulfil other responsibilities and duties**</b>	<b>2.73 (1.02)</b>	<b>2.87 (1.15)</b>	<b>2.89 (1.15)</b>	<b>3.22 (1.14)</b>
Due to my work, I have to make changes to my plans for activities outside of work	3.21 (1.06)	3.13 (1.02)	3.34 (1.10)	3.51 (1.05)
<b>Overall, I believe that my work and non-work life are balanced*</b>	<b>3.30 (1.00)</b>	<b>3.13 (1.02)</b>	<b>3.12 (1.15)</b>	<b>2.88 (1.09)</b>

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

## Appendix IV – Tables by Type of contract

Table 1.4. Percentage of male and female respondents, per type of contract

Type of contract	Male	Female
Employed UG/UMCG	35.7	61.5
Externally financed	37.1	60.0
Scholarship UG/UMCG	41.1	57.1

Table 2.4. Percentage of respondents' nationalities, per type of contract

Type of contract	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Employed UG/UMCG	54.4	21.9	22.3
Externally financed	51.4	14.3	31.4
Scholarship UG/UMCG	23.8	19.5	56.1

Table 3.4. Percentage of respondents in graduate schools, per type of contract

Type of contract	GSBSS	GSCF	GSEB	GSH	GSL	GSMS	GSP	GSSE	GSSS	GSTRS
Employed UG/UMCG	12.7	1.8	5.7	6.0	2.8	33.6	1.8	28.6	3.2	1.8
Externally financed	31.4	-	-	8.6	-	25.7	2.19	22.9	5.7	-
Scholarship UG/UMCG	12.2	5.5	4.9	11.0	3.7	20.7	-	31.7	4.3	3.7

Table 5.4. Percentage of allotted time period for the PhD project, per type of contract

Type of contract	< 3 Years	3 Years	4 Years	> 4 Years	Other	Don't know
Employed UG/UMCG	1.1	13.1	76.3	6.0	3.2	0.4
Externally financed	2.9	8.8	50.0	23.5	8.8	5.9
Scholarship UG/UMCG	4.3	6.7	84.8	2.4	1.2	0.6

Table 6.4. Percentage of full time/part time, per type of contract

Type of contract	Full-time	Part-time	Other/don't know
Employed UG/UMCG	85.4	12.9	1.8
Externally financed	61.3	22.6	16.1
Scholarship UG/UMCG	80.7	3.7	15.5

Table 7.4. Percentage of current year of PhD, per type of contract

Type of contract	First year	Second year	Third year	Fourth year	Fifth year	Over five years
Employed UG/UMCG	29.3	22.1	27.5	17.1	2.9	1.1
Externally financed	37.1	14.3	14.3	20.0	2.9	11.4
Scholarship UG/UMCG	32.9	26.8	14.0	18.9	7.3	-

Table 7.4.1. Percentage of junior and senior respondents, per type of contract

Type of contract	Junior	Senior
Employed UG/UMCG	51.4	48.6
Externally financed	51.4	48.6
Scholarship UG/UMCG	59.8	40.2

Table 8.4. Mean (SD) of satisfaction with performance, project characteristics, and confidence, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Overall, I am satisfied with how I am performing in my PhD.*	<b>3.38 (1.01)</b>	<b>3.85 (0.76)</b>	<b>3.51 (1.00)</b>
Overall, my primary supervisor (promotor) is satisfied with how I am performing.	4.01 (0.64)	4.16 (0.85)	3.98 (0.72)
Overall, my daily supervisor is satisfied with how I am performing.	3.99 (0.70)	4.16 (0.81)	3.97 (0.80)
Overall, I know what my supervisors expect of me.	3.68 (0.91)	3.97 (1.00)	3.82 (0.89)
The workload in my PhD is high.	3.91 (0.90)	3.71 (0.89)	3.76 (0.86)
The complexity of my PhD is high.	4.07 (0.77)	3.91 (0.85)	3.93 (0.85)
I am confident that I will, eventually, finish my PhD.	4.16 (0.87)	4.26 (0.66)	4.34 (0.77)
<b>I am confident that I will be able to submit my thesis to the assessment committee before the end of my contract.**</b>	<b>3.00 (1.19)</b>	<b>3.39 (1.32)</b>	<b>3.44 (1.26)</b>
<b>I am confident that I will find a suitable and interesting job after I have finished my PhD.**</b>	<b>3.72 (1.02)</b>	<b>4.06 (1.24)</b>	<b>3.47 (1.10)</b>

Note: Answers were given on a scale of 1 (completely disagree) to 5 (completely agree). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 9.4. Progress of the PhD students with their thesis; percentage of respondents per statement, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Yes, I think I will be able to finish my PhD in time	35.1	42.9	46.3
No, I have fallen behind but I still think I can finish in time	24.5	22.9	22.0
No, I have fallen behind and I don't think I will be able to finish in time	19.5	8.6	12.2
I was unable to finish in time and am currently on an extension	4.3	8.6	8.5
I was unable to finish in time and am currently finishing my thesis in my own time	0.7	-	0.6
I have already defended my thesis or sent the manuscript to the assessment committee	0.4	2.9	-
I don't know	9.6	5.7	5.5
other <sup>1</sup>	6.0	8.6	4.9

Table 10.4. Mean (SD) of consideration of quitting, and satisfaction with the trajectory and the supervision, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Have you ever considered quitting your PhD project? <sup>1</sup>	3.87 (1.29)	4.26 (1.07)	4.06 (1.31)
How satisfied are you with your PhD trajectory so far? <sup>2</sup>	3.49 (0.88)	3.71 (0.67)	3.52 (0.97)
How satisfied are you with the supervision you receive? <sup>2</sup>	3.84 (1.04)	4.03 (0.95)	3.95 (0.95)

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = yes, very often, 5 = no, never),

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Table 11.4 Mean of frequency and satisfaction with (online) supervision, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
<b>Frequency of (online) meetings with daily supervisor<sup>1**</sup></b>	<b>2.60 (1.05)</b>	<b>3.09 (1.20)</b>	<b>2.90 (1.11)</b>
<b>Frequency of (online) meetings with primary supervisor<sup>1***</sup></b>	<b>3.25 (1.12)</b>	<b>4.09 (1.06)</b>	<b>3.44 (1.06)</b>
Satisfaction meetings with daily supervisor <sup>2</sup>	4.09 (1.00)	4.03 (1.12)	4.08 (1.05)
Satisfaction meetings with primary supervisor <sup>2</sup>	3.88 (1.02)	4.06 (1.01)	3.91 (1.10)

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = several times a week; 2 = about once a week; 3 = several times a month; 4 = about once a month; 5 = less than once a month).

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 12.4. Mean (SD) of regarding the atmosphere within the department, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
<b>Formal relationships*</b>	<b>3.46 (0.71)</b>	<b>3.26 (0.78)</b>	<b>3.28 (0.75)</b>
<b>Informal relationships***</b>	<b>3.32 (0.95)</b>	<b>2.99 (0.96)</b>	<b>2.97 (0.88)</b>
Sense of belonging*	3.75 (0.76)	3.48 (0.89)	3.59 (0.79)

Note: answers were given on a scale of 1 to 5; a higher score indicates a stronger and more positive sense of (in)formal relationships between colleagues. Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 13.4. Mean (SD) of impact of Covid-19 on the ability to engage in aspects of the PhD project, per type of contract

What impact has COVID-19 had on the ability to engage in this work:	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Data collection	2.12 (0.89)	2.29 (1.01)	2.27 (0.91)
Data analysis	2.64 (0.82)	2.90 (0.96)	2.70 (0.83)
Writing	2.78 (0.91)	2.91 (1.01)	2.82 (0.86)
<b>Discussing ideas and findings with colleagues and peers **</b>	<b>1.83 (0.87)</b>	<b>2.18 (0.94)</b>	<b>2.12 (0.96)</b>
Dissemination and sharing research finding with stakeholders and other	2.01 (0.86)	2.21 (1.01)	2.18 (0.97)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive).

Table 14.4. Mean (SD) of impact of Covid-19 on other aspects, per type of contract

What impact did COVID-19 have on your:	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Motivation to work on PhD project	2.39 (0.78)	2.59 (0.89)	2.47 (0.89)
Progress of PhD projects	2.19 (0.85)	2.44 (0.82)	2.24 (0.96)
Future career prospects	2.77 (0.65)	2.70 (0.88)	2.61 (0.87)
Mental health	2.16 (0.78)	2.29 (0.91)	2.26 (0.90)
Work-life balance	2.52 (1.03)	2.68 (1.15)	2.50 (1.06)
Contact with daily supervisor/promotor	2.54 (0.75)	2.62 (0.74)	2.46 (0.84)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive).

Table 15.4. Percentage of effects attributed to COVID-19 pandemic, per type of contract

Due to the COVID-19 pandemic I currently... (multiple answers are possible)	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
feel anxious in social situations	18.7	14.3	30.5
feel overwhelmed in bigger groups of people	32.2	22.9	35.4
feel lonely	19.4	20.0	20.7
feel depressed	13.4	22.9	17.7
do not feel a sense of belonging to my research group	27.2	28.6	27.4
Other – please explain	15.9	25.7	16.5



Table 16.4. Mean (SD) of mental health indicators, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
WHO score (0-100) <sup>1</sup>	47.14 (19.30)	46.63 (24.29)	50.43 (21.07)
GHQ-12 (0-36) <sup>2</sup>	14.42 (6.29)	13.63 (7.26)	15.22 (6.71)
Mental health, current <sup>3</sup>	6.52 (1.80)	6.55 (2.02)	6.42 (2.08)
Mental health, during-COVID-19 pandemic <sup>3</sup>	5.46 (2.02)	5.50 (2.40)	5.60 (2.18)
Mental health during Bachelor's / Master's <sup>3</sup>	7.45 (1.53)	7.29 (1.58)	7.36 (1.61)
Do you feel happy in general? <sup>4</sup>	6.63 (1.80)	6.66 (1.95)	6.59 (1.93)
Resilience	3.29 (0.77)	3.29 (0.79)	3.23 (0.76)

<sup>1</sup> Answers were given on a scale of 0 = all the time to 5=at no time. A sum score of the 5 WHO items was calculated and multiplied by 4. Note that the 2022 WHO-score cannot be compared to the 2020 WHO score, since different answer categories were used.

<sup>2</sup> Answers were given on a scale of 0 to 3. A sum score of the 12 GHQ items was calculated.

<sup>3</sup> Answers were given on a scale of 0 = extremely poor to 10 = extremely good.

<sup>4</sup> An answer was given on a scale of 0 = minimum score to 10 = maximum score.

Table 17.4. Percentage of 'In your experience, is doing a PhD affecting your mental health?', per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
No	3.2	11.4	6.1
Overall, doing a PhD has a large negative effect on my mental health	13.1	14.3	6.7
Overall, doing a PhD has a small negative effect on my mental health	16.3	2.9	12.2
Sometimes doing a PhD has a negative effect on my mental health, sometimes a positive effect	43.1	25.7	48.2
Overall, doing a PhD has a small positive effect on my mental health	12.4	22.9	14.0
Overall, doing a PhD has a large positive effect on my mental health	7.1	20.0	10.4
I don't know	4.9	2.9	2.4

Table 18.4. Percentages of aspects of doing a PhD trajectory that negatively affect mental health, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
High workload	44.4	22.9	35.4
Problems with work-life balance	42.0	28.6	34.8
Insecurities about future career	26.9	11.4	37.8
Insecurities about own capabilities	51.2	22.9	45.1
Not being able to finish in time or doubts about being able to finish in time	38.9	22.9	29.3
Not achieving good results or doubts about achieving good results	35.7	14.3	40.2
Issues due to practical setbacks in the project	31.8	11.4	19.5
Publication pressure	30.0	17.1	30.5
Problems with supervisors	15.5	11.4	13.4
Problems with colleagues	7.1	-	6.7
High level of competition in academia	23.7	11.4	23.2
Unclear expectations	21.6	17.1	28.0
Procrastination, lack of motivation	38.9	17.1	34.1
Other	6.7	8.6	9.1

Table 19.4. Mean (SD) of the different factors of burnout and engagement, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Burn out: Exhaustion	3.77 (1.15)	3.32 (1.49)	3.65 (1.03)
<b>Burn out: Cynicism*</b>	<b>3.68 (1.43)</b>	<b>2.98 (1.59)</b>	<b>3.69 (1.42)</b>
<b>Burn out: Professional efficacy ***</b>	<b>4.89 (0.73)</b>	<b>5.32 (0.67)</b>	<b>5.08 (0.73)</b>
Work engagement: Dedication	4.54 (0.94)	4.93 (1.06)	4.66 (1.09)
Work engagement: Vigour	3.83 (0.94)	4.18 (1.30)	4.00 (1.06)

Note: answers were given on a scale of 1 (never) to 7 (all the time).

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 20.4. Percentage of answers to the question: 'Do you currently worry about your career?', per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Never	7.8	17.1	6.1
Rarely	19.1	28.6	12.8
Sometimes	42.8	42.9	39.6
Often	22.3	5.7	28.0
All of the time	8.1	5.7	13.4

Table 21.4. Percentage of types of career worries, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Not knowing what kind of career I want	41.0	20.0	32.9
Being unsure whether I am good enough for the kind of job I want	29.0	25.7	41.5
Having to move to another place for a new job	26.5	22.9	30.5
Feeling unprepared for the job I want	20.1	14.3	29.3
The high competition to obtain the job I want	32.9	28.6	45.7
Having to start a new job while my PhD thesis is not yet finished	21.2	11.4	22.0
The work-life balance in my future job	23.0	20.0	25.0
Being insecure about my skills in writing application letters and/or job interviews	12.0	14.3	24.4
Other	11.0	11.4	14.0

Table 23.4. Mean (SD) of statements about talking about mental health problems, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
If I were to experience mental health problems, I would know who I could talk to at the University/UMCG	3.23 (1.24)	3.25 (1.24)	3.21 (1.29)
If I were to experience mental health problems, I would like to talk about it with someone at the University/UMCG	3.24 (1.06)	3.10 (1.08)	3.45 (1.06)
If I were to experience mental health problems, I would talk about this with my primary supervisor	3.16 (1.27)	3.21 (1.24)	3.33 (1.24)
My primary supervisor would act supportively if I told him/her I am experiencing mental health problems	3.96 (1.06)	3.94 (1.09)	4.11 (0.93)
If I were to experience mental health problems, I would talk about this with my daily supervisor	3.52 (1.25)	3.52 (1.18)	3.51 (1.31)
My daily supervisor would act supportively if I told him/her I am experiencing mental health problems	4.10 (1.08)	4.17 (1.05)	4.20 (0.84)
I would talk about this with a professional outside the University/UMCG.	3.93 (0.94)	4.00 (0.89)	3.86 (1.06)

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).

Table 24.4. Percentage of PhD students that knows about different forms of PhD support, per type of contract

Before filling out this survey, did you know that as a PhD student you have access to...	Employed UG/UMCG		Externally financed		Scholarship UG/UMCG	
	Yes	No	Yes	No	Yes	No
the PhD Support website	60.6	39.4	65.7	34.3	66.5	33.5
Courses and workshops (through PhD support)	89.4	10.6	85.7	14.3	89.0	11.0
Career Perspectives series	89.0	11.0	80.0	20.0	94.5	5.5
individual counseling (through PhD support)	57.2	42.8	51.4	48.6	57.4	42.6
PhD psychologists	52.1	47.9	50.0	50.0	55.8	44.2
an independent ombuds person (onafhankelijke ombuds functionaris)	31.9	68.1	34.3	65.7	32.3	67.7
a confidential advisor (vertrouwenspersoon)	78.0	22.0	77.1	22.9	61.6	38.4
PhD mentor	36.1	63.9	48.6	51.4	48.5	51.5

Table 25.4. Percentage of PhD students who are experiencing or have experienced mental health problems during their PhD, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
No, I have never experienced mental health problems that affected my work	45.6	45.7	39.0
Yes, I have experienced mental health problems that affected my work	28.6	20.0	36.6
Yes, I am currently experiencing mental health problems that affect my work	20.8	28.6	17.7
Prefer not to say	4.9	5.7	6.7

Table 26.4. Percentage of PhD students who have talked about their mental health problems with someone at the UG/UMCG, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
I have never talked to anyone at the UG/UMCG about my problems	13.1	14.3	9.1
I have talked to my supervisor	24.4	22.9	25.6
I have talked to a colleague / colleagues	23.0	22.9	27.4
I have talked to the psychologist for PhD students	8.1	2.9	11.6
I have talked to the confidential advisor	5.3	8.6	4.3
I have talked to my PhD coordinator or mentor	4.2	-	3.7
I have talked to someone from Student Support or Career Services	3.9	-	6.1
I have talked to someone from AMD (Health, Safety and Environment Service), e.g. an occupational health worker	6.7	2.9	2.4
Yes, to a PhD counselor (available for FSE and UMCG)	2.1	2.9	2.4
Other	3.5	11.4	3.0

Table 27.4. Percentage and Mean (SD) of 'How helpful was talking to someone?', per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
Not helpful at all	4.0	16.7	1.4
Hardly helpful	11.1	33.3	6.8
Somewhat helpful	44.4	8.3	50.7
Quite helpful	31.3	25.0	30.1
Extremely helpful	9.1	16.7	11.0
How helpful was/is it to talk about your problems with the person(s) you indicated you talk(ed) to in the previous question? <sup>1</sup> (Mean (SD))	3.30 (0.93)	2.92 (1.44)	3.42 (0.83)

<sup>1</sup> Note: answers were given on a scale of 1 (not helpful at all) to 5 (extremely helpful).

Table 28.4. Percentage of PhD students who engage in structural activities in addition to their PhD, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
No additional activities	69.6	34.3	74.4
I have another job	8.8	48.6	6.7
I am on the board of an organization or actively involved in an organization	9.5	11.4	7.3
I am actively involved in a political party	0.4	2.9	0.6
I do voluntary work	5.3	5.7	7.3
I am an informal caregiver for a relative or other person	1.8	2.9	1.8
I am a professional / semi-professional athlete or musician	2.8	2.9	3.0
Other	4.2	8.6	3.7

Table 29.4. Percentage of working hours and vacation, per type of contract

	Employed UG/UMCG		Externally financed		Scholarship UG/UMCG	
	Yes	No	Yes	No	Yes	No
Do you generally work more hours than your contract requires?	56.7	40.1	40.0	48.6	40.9	33.5
On average, how many hours do you work extra a week (M, SD)	12.00 (12.44)		11.71 (12.27)		15.70 (14.67)	
Does working overtime cause you extra stress (answered by respondents who do work more hours)?	52.2	43.4	46.2	53.8	55.2	38.8
Do you generally take off all the vacation/leave days you are entitled to each year?	84.1	14.5	77.1	22.9	61.3	20.9
Does not taking off the vacation/leave days cause you extra stress (answered by respondents who do not take vacation/leave days)?	58.5	41.5	71.4	28.6	64.7	32.4

Table 30.4. Mean (SD) of respondents' work-life balance, per type of contract

	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG
I have difficulties balancing my work and non-work activities	3.16 (1.10)	3.17 (1.20)	3.13 (1.12)
The demands of my work interfere with my life away from work	3.12 (1.15)	2.74 (1.15)	3.18 (1.08)
The amount of time my work takes up makes it difficult to fulfil other interests	3.04 (1.11)	2.69 (1.21)	3.17 (1.12)
Things that I want to do at home do not get done because of work demands	2.98 (1.09)	2.89 (1.34)	2.99 (1.06)
My work produces strain that makes it difficult to fulfil other responsibilities and duties	2.97 (1.12)	2.80(1.30)	3.05 (1.13)
Due to my work, I have to make changes to my plans for activities outside of work	3.35 (1.04)	3.11 (1.30)	3.30 (1.05)
Overall, I believe that my work and non-work life are balanced	3.03 (1.08)	3.37 (1.17)	2.98 (1.12)

*Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).*

## Appendix V – Tables per Phase of the project

Table 1.5. Percentage of male and female respondents, per phase of project

Phase	Male	Female
Junior	35.5	62.4
Senior	37.5	61.0

Table 2.5. Percentage of respondents' nationalities, per phase of project

Phase	Dutch	Nationality from EEA country (non-Dutch)	Other nationality
Junior	42.4	21.2	35.4
Senior	47.1	20.1	31.7

Table 3.5. Percentage of respondents in graduate schools, per phase of project

Type of contract	GSBSS	GSCF	GSEB	GSH	GSL	GSMS	GSP	GSSE	GSSS	GSTRS
Junior	12.5	2.4	4.5	9.0	2.8	30.6	1.4	26.7	4.5	3.1
Senior	15.4	2.7	5.4	8.1	2.3	29.7	0.8	29.3	2.3	1.2

Table 4.5. Percentage of respondents' type of contract, per phase of project

Phase	Employed UG/UMCG	Externally financed	Scholarship UG/UMCG	MD/PHD	End of contract	Other
Junior	50.0	6.3	34.0	4.5	-	4.2
Senior	52.5	6.6	25.5	1.5	5.8	7.3

Table 5.5. Percentage of allotted time period for the PhD project, per phase of project

Phase	< 3 Years	3 Years	4 Years	> 4 Years	Other	Don't know
Junior	4.9	10.4	76.0	6.3	0.7	1.7
Senior	3.9	9.3	69.0	7.8	6.6	3.5

Table 6.5. Percentage of full time/part time, per phase of the project

Phase	Full-time	Part-time	Other/don't know
Junior	82.7	8.9	8.5
Senior	81.3	12.1	6.5

Table 7.5. Percentage of current year of PhD, per phase of project

Phase	First year	Second year	Third year	Fourth year	Fifth year	Over five years
Junior	59.4	40.6	-	-	-	-
Senior	-	-	44.8	36.7	12.0	6.6

Table 8.5. Mean (SD) of satisfaction with performance, project characteristics, and confidence, per phase of PhD project

	Junior	Senior
Overall, I am satisfied with how I am performing in my PhD.	3.52 (0.97)	3.39 (1.04)
Overall, my primary supervisor (promotor) is satisfied with how I am performing.	4.03 (0.69)	3.95 (0.73)
Overall, my daily supervisor is satisfied with how I am performing.	4.04 (0.72)	3.93 (0.79)
Overall, I know what my supervisors expect of me.	3.73 (0.89)	3.77 (0.96)
<b>The workload in my PhD is high.***</b>	<b>3.68 (0.91)</b>	<b>4.05 (0.87)</b>
The complexity of my PhD is high.*	3.95 (0.80)	4.08 (0.82)
I am confident that I will, eventually, finish my PhD.	4.22 (0.81)	4.23 (0.82)
<b>I am confident that I will be able to submit my thesis to the assessment committee before the end of my contract.***</b>	<b>3.53 (1.12)</b>	<b>2.71 (1.27)</b>
I am confident that I will find a suitable and interesting job after I have finished my PhD.	3.74 (1.04)	3.66 (1.09)

Note: Answers were given on a scale of 1 (completely disagree) to 5 (completely agree). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 9.5. Progress of the PhD students with their thesis; percentage of respondents per statement, per phase of project

	Junior	Senior
Yes, I think I will be able to finish my PhD in time	51.9	24.3
No, I have fallen behind but I still think I can finish in time	21.6	24.3
No, I have fallen behind and I don't think I will be able to finish in time	9.1	24.7
I was unable to finish in time and am currently on an extension	0.3	13.1
I was unable to finish in time and am currently finishing my thesis in my own time	-	5.4
I have already defended my thesis or sent the manuscript to the assessment committee	-	0.8
I don't know / other	17.0	7.3



Table 10.5. Mean (SD) of consideration of quitting, and satisfaction with the trajectory and the supervision, per phase of project

	Junior	Senior
Have you ever considered quitting your PhD project? <sup>1***</sup>	<b>4.18 (1.19)</b>	<b>3.63 (1.39)</b>
How satisfied are you with your PhD trajectory so far? <sup>2***</sup>	<b>3.67 (0.83)</b>	<b>3.29 (.97)</b>
How satisfied are you with the supervision you receive? <sup>2***</sup>	<b>4.03 (.91)</b>	<b>3.69 (1.12)</b>

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = yes, very often, 5 = no, never),

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 11.5 Mean of frequency and satisfaction with (online) supervision, per phase of project

	Junior	Senior
Frequency of (online) meetings with daily supervisor <sup>1***</sup>	<b>2.60 (1.05)</b>	<b>2.95 (1.14)</b>
Frequency of (online) meetings with primary supervisor <sup>1**</sup>	<b>3.25 (1.08)</b>	<b>3.54 (1.16)</b>
Satisfaction meetings with daily supervisor <sup>2**</sup>	<b>4.22 (0.98)</b>	<b>3.96 (1.05)</b>
Satisfaction meetings with primary supervisor <sup>2***</sup>	<b>4.14 (0.93)</b>	<b>3.67 (1.11)</b>
Frequency of (online) meetings with daily supervisor <sup>1***</sup>	<b>2.60 (1.05)</b>	<b>2.95 (1.14)</b>

Note: answers were given on a scale from 1 to 5.

<sup>1</sup> (1 = several times a week; 2 = about once a week; 3 = several times a month; 4 = about once a month; 5 = less than once a month).

<sup>2</sup> (1 = very dissatisfied, 5 = very satisfied).

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 12.5 . Mean (SD) of regarding the atmosphere within the department, per phase of project

	Junior	Senior
Formal relationships	3.44 (0.71)	3.35 (0.78)
Informal relationships	3.16 (0.89)	3.14 (1.00)
<b>Sense of belonging**</b>	<b>3.77 (0.73)</b>	<b>3.55 (0.87)</b>

Note: answers were given on a scale of 1 to 5; a higher score indicates a stronger and more positive sense of (in)formal relationships between colleagues. Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 13.5. Mean (SD) of impact of Covid-19 on the ability to engage in aspects of the PhD project, per phase of project

What impact has COVID-19 had on the ability to engage in this work:	Junior	Senior
<b>Data collection ***</b>	<b>2.48 (0.85)</b>	<b>1.97 (0.90)</b>
<b>Data analysis **</b>	<b>2.80 (0.63)</b>	<b>2.60 (0.94)</b>
Writing	2.85 (0.76)	2.73 (0.99)
<b>Discussing ideas and findings with colleagues and peers ***</b>	<b>2.10 (0.94)</b>	<b>1.82 (0.85)</b>
<b>Dissemination and sharing research finding with stakeholders and other ***</b>	<b>2.30 (0.88)</b>	<b>1.92 (0.87)</b>

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 14.5. Mean (SD) of impact of Covid-19 on other aspects, per phase of project

What impact did COVID-19 have on your:	Junior	Senior
<b>Motivation to work on PhD project ***</b>	<b>2.66 (0.81)</b>	<b>2.26 (0.82)</b>
<b>Progress of PhD projects ***</b>	<b>2.47 (0.85)</b>	<b>2.02 (0.87)</b>
<b>Future career prospects**</b>	<b>2.81 (0.67)</b>	<b>2.60 (0.81)</b>
Mental health	2.27 (0.82)	2.17 (0.82)
Work-life balance	2.51 (1.0)	2.57 (1.09)
Contact with daily supervisor/promotor	2.55 (0.76)	2.46 (0.79)

Note: answers were given on a scale of 1 (strongly negative) to 5 (strongly positive). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 15.5. Percentage of effects attributed to COVID-19 pandemic, per phase of project

Due to the COVID-19 pandemic I currently... (multiple answers are possible)	Junior	Senior
feel anxious in social situations	23.6	19.3
feel overwhelmed in bigger groups of people	34.7	29.7
feel lonely	20.8	18.5
feel depressed	13.5	14.3
do not feel a sense of belonging to my research group	22.2	32.8
Other – please explain	17.0	15.8

Table 16.5 Mean (SD) of mental health indicators, per phase of project

	Junior	Senior
<b>WHO score (0-100)<sup>1</sup> **</b>	<b>45.56 (19.90)</b>	<b>51.29 (21.17)</b>
<b>GHQ-12 (0-36)<sup>2</sup> **</b>	<b>13.98 (6.37)</b>	<b>15.56 (6.80)</b>
Mental health, current <sup>3</sup>	6.63 (1.96)	6.32 (1.93)
Mental health, during-COVID-19 pandemic <sup>3</sup>	5.68 (2.16)	5.36 (2.07)
<b>Mental health during Bachelor's / Master's<sup>3</sup> **</b>	<b>7.24 (1.57)</b>	<b>7.64 (1.50)</b>
<b>Do you feel happy in general?<sup>4</sup> **</b>	<b>6.83 (1.77)</b>	<b>6.35 (1.96)</b>
<b>Resilience*</b>	<b>3.34 (0.77)</b>	<b>3.21 (0.80)</b>

<sup>1</sup> Answers were given on a scale of 0 = all the time to 5=at no time. A sum score of the 5 WHO items was calculated and multiplied by 4. Note that the 2022 WHO-score cannot be compared to the 2020 WHO score, since different answer categories were used.

<sup>2</sup> Answers were given on a scale of 0 to 3. A sum score of the 12 GHQ items was calculated.

<sup>3</sup> Answers were given on a scale of 0 = extremely poor to 10 = extremely good.

<sup>4</sup> An answer was given on a scale of 0 = minimum score to 10 = maximum score.

Significant differences are indicated in bold. \*p < .05; \*\*p < .01; \*\*\*p < .001.

Table 17.5. Percentage of 'In your experience, is doing a PhD affecting your mental health?', per phase of project

	Junior	Senior
No	6.3	2.7
Overall, doing a PhD has a large negative effect on my mental health	4.5	19.3
Overall, doing a PhD has a small negative effect on my mental health	10.4	16.6
Sometimes doing a PhD has a negative effect on my mental health, sometimes a positive effect	42.0	43.2
Overall, doing a PhD has a small positive effect on my mental health	17.0	10.8
Overall, doing a PhD has a large positive effect on my mental health	14.9	5.0
I don't know	4.9	2.3

Table 18.5. Percentages of aspects of doing a PhD trajectory that negatively affect mental health, per phase of project

	Junior	Senior
High workload	32.3	48.6
Problems with work-life balance	34.4	44.4
Insecurities about future career	20.5	38.2
Insecurities about own capabilities	40.6	52.5
Not being able to finish in time or doubts about being able to finish in time	21.2	51.4
Not achieving good results or doubts about achieving good results	31.9	39.0
Issues due to practical setbacks in the project	19.8	33.2
Publication pressure	20.1	37.8
Problems with supervisors	8.3	22.8
Problems with colleagues	4.5	7.7
High level of competition in academia	15.6	27.8
Unclear expectations	17.0	29.3
Procrastination, lack of motivation	28.8	42.5
Other	5.9	8.5

Table 19.5. Mean (SD) of the different factors of burnout and engagement, per phase of project

	Junior	Senior
<b>Burn out: Exhaustion ***</b>	<b>3.42 (1.07)</b>	<b>4.04 (1.21)</b>
<b>Burn out: Cynicism ***</b>	<b>3.23 (1.33)</b>	<b>4.10 (1.50)</b>
<b>Burn out: Professional efficacy **</b>	<b>5.08 (0.73)</b>	<b>4.90 (0.75)</b>
<b>Work engagement: Dedication ***</b>	<b>4.83 (0.97)</b>	<b>4.37 (1.09)</b>
<b>Work engagement: Vigour ***</b>	<b>4.09 (1.00)</b>	<b>3.73 (1.06)</b>

Note: answers were given on a scale of 1 (never) to 7 (all the time).

Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 20.5. Percentage of answers to the question: 'Do you currently worry about your career?', per phase

	Junior	Senior
Never	9.4	8.5
Rarely	24.3	12.0
Sometimes	41.3	37.5
Often	18.8	27.4
All of the time	6.3	14.7

Table 21.5. Percentage of types of career worries, per phase of project

	Junior	Senior
Not knowing what kind of career I want	29.5	40.9
Being unsure whether I am good enough for the kind of job I want	29.9	36.7
Having to move to another place for a new job	24.7	29.7
Feeling unprepared for the job I want	18.1	27.8
The high competition to obtain the job I want	34.7	40.5
Having to start a new job while my PhD thesis is not yet finished	11.8	30.1
The work-life balance in my future job	21.5	27.4
Being insecure about my skills in writing application letters and/or job interviews	14.2	17.4
Other	9.0	13.1

Table 23.5. Mean (SD) of statements about talking about mental health problems, per phase of project

	Junior	Senior
If I were to experience mental health problems, I would know who I could talk to at the University/UMCG	3.20 (1.23)	3.19 (1.32)
If I were to experience mental health problems, I would like to talk about it with someone at the University/UMCG	3.40 (1.05)	3.23 (1.13)
If I were to experience mental health problems, I would talk about this with my primary supervisor	3.20 (1.24)	3.25 (1.29)
My primary supervisor would act supportively if I told him/her I am experiencing mental health problems	4.10 (0.89)	3.90 (1.16)
If I were to experience mental health problems, I would talk about this with my daily supervisor	3.49 (1.24)	3.55 (1.28)
My daily supervisor would act supportively if I told him/her I am experiencing mental health problems	4.22 (0.86)	4.01 (1.17)
I would talk about this with a professional outside the University/UMCG	3.77 (1.05)	4.06 (0.86)

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree).

Table 24.5. Percentage of PhD students that knows about different forms of PhD support, per phase of project

Before filling out this survey, did you know that as a PhD student you have access to...	Junior		Senior	
	Yes	No	Yes	No
the PhD Support website	63.4	36.6	62.2	37.8
Courses and workshops (through PhD support)	85.7	14.3	92.2	7.8
Career Perspectives series	86.8	13.2	91.8	8.2
individual counseling (through PhD support)	55.2	44.8	57.9	42.1
PhD psychologists	51.9	48.1	52.1	47.9
an independent ombuds person (onafhankelijke ombuds functionaris)	29.2	70.8	36.4	63.6
a confidential advisor (vertrouwenspersoon)	70.7	29.3	74.9	25.1

Table 25.5. Percentage of PhD students who are experiencing or have experienced mental health problems during their PhD, per phase of project

	Junior	Senior
No, I have never experienced mental health problems that affected my work	51.7	34.7
Yes, I have experienced mental health problems that affected my work	22.2	39.4
Yes, I am currently experiencing mental health problems that affect my work	19.4	22.0
Prefer not to say	6.6	3.9

Table 26.5. Percentage of PhD students who have talked about their mental health problems with someone at the UG/UMCG, per phase of project

	Junior	Senior
I have never talked to anyone at the UG/UMCG about my problems	10.1	13.5
I have talked to my supervisor	19.4	32.8
I have talked to a colleague / colleagues	19.4	28.6
I have talked to the psychologist for PhD students	4.9	12.4
I have talked to the confidential advisor	3.8	8.1
I have talked to my PhD coordinator or mentor	3.1	4.6
I have talked to someone from Student Support or Career Services	4.9	4.6
I have talked to someone from AMD (Health, Safety and Environment Service), e.g. an occupational health worker	2.1	9.7
Yes, to a PhD counselor (available for FSE and UMCG)	1.4	3.1
Other	3.5	5.4

Table 27.5. Mean (SD) and percentage of 'How helpful was talking to someone?', per phase of project

	Junior	Senior
Not helpful at all	4.5	5.0
Hardly helpful	7.9	13.2
Somewhat helpful	43.8	40.5
Quite helpful	33.7	32.2
Extremely helpful	10.1	9.1
How helpful was/is it to talk about your problems with the person(s) you indicated you talk(ed) to in the previous question? <sup>1</sup> (Mean (SD))	3.37 (.93)	3.27 (.98)

<sup>1</sup> Note: answers were given on a scale of 1 (not helpful at all) to 5 (extremely helpful).

Table 28.5. Percentage of PhD students who engage in structural activities in addition to their PhD, per phase of project

	Junior	Senior
No additional activities	64.2	66.8
I have another job	12.5	16.2
I am on the board of an organization or actively involved in an organization	12.8	4.6
I am actively involved in a political party	0.7	0.8
I do voluntary work	5.2	6.2
I am an informal caregiver for a relative or other person	2.1	2.7
I am a professional / semi-professional athlete or musician	3.1	2.7
Other	3.8	5.8

Table 29.5. Percentage of working hours and vacation, per phase of project

	Junior		Senior	
	Yes	No	Yes	No
Do you generally work more hours than your contract requires?	43.2	43.6	55.2	29.0
On average, how many hours do you work extra a week (M, SD)	12.21 (11.71)		14.35 (14.29)	
Does working overtime cause you extra stress (answered by respondents who do work more hours)?	48.8	44.7	56.6	41.3
Do you generally take off all the vacation/leave days you are entitled to each year?	74.2	16.4	75.7	15.4
Does not taking off the vacation/leave days cause you extra stress (answered by respondents who do not take vacation/leave days)?	58.7	39.1	65.0	35.0

Table 30.5. Mean (SD) of respondents' work-life balance, per phase of project

	Junior	senior
I have difficulties balancing my work and non-work activities**	<b>3.05 (1.13)</b>	<b>3.32 (1.09)</b>
The demands of my work interfere with my life away from work***	<b>2.94 (1.14)</b>	<b>3.39 (1.09)</b>
The amount of time my work takes up makes it difficult to fulfil other interests***	<b>2.87 (1.14)</b>	<b>3.36 (1.09)</b>
Things that I want to do at home do not get done because of work demands***	<b>2.78 (1.10)</b>	<b>3.26 (1.12)</b>
My work produces strain that makes it difficult to fulfil other responsibilities and duties***	<b>2.76 (1.11)</b>	<b>3.28 (1.12)</b>
Due to my work, I have to make changes to my plans for activities outside of work**	<b>3.23 (1.09)</b>	<b>3.48 (1.03)</b>
Overall, I believe that my work and non-work life are balanced***	<b>3.20 (1.08)</b>	<b>2.86 (1.10)</b>

Note: answers were given on a scale of 1 (completely disagree) to 5 (completely agree). Significant differences are indicated in bold. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .



## Appendix VI – PhD students’ suggestions of what the UG/UMCG can do to increase social safety.

- Encourage more social interaction with colleagues:
  - Organize social events
  - Hang-out place/coffee corner for PhD-students in the department
  - Not planning meetings during lunch time
  - Host regular events for minorities such as different nationalities or for queers
- Inform PhD students more clearly of where they can go for help or when they have complaint
  - Repeated announcement in newsletter
  - Posters/flyers
  - Introduce (new) PhD-students in a more personal way to psychologist and confidential advisor, *e.g.* by organizing a meeting every half year
  - Communicate more clearly what the rights of PhD students are so they are more aware what is or is not acceptable when it comes to behaviour of colleagues/supervisors
  - More confidential advisors, possibly specialized for PhD students
- Offering (mandatory) training:
  - Intercultural competence
  - Active Bystander
  - Discussion on social safety, creating safe space to talk
  - Education against discrimination and racism
  - Make diversity and integrity training mandatory
  - Conflict resolution skills for those in leadership
- Concerning supervisors/promotors/mentors
  - Training in how to supervise
  - When supervisors/promotors are behaving in non-acceptable ways, there should be consequences to prevent future ‘abuse’ and continuation of unacceptable behaviours
  - Extend the mentorship programme *e.g.* by one-on-one meetings of PhD-student with PhD mentor
- Concerning relationship international PhD students and Dutch colleagues
  - Organize social events
  - Encourage speaking English with internationals around
  - Buddy system
  - More practical help for international PhD students when moving to the Netherlands (*e.g.* provide housing)
- Facilities
  - Personal office space
  - Prayer room/place for wudu (practice of ritual washing before daily prayer)
- Pay more attentions to equity, diversity and inclusion in teams
  - Avoiding bias when hiring

- Pay attention to diversity in teams
- Encourage treating/appreciate PhD-students as fellow researchers, not as 'lower colleagues'
- Letting females speak as much as males during meetings
- Other
  - Include social safety in R & O form
  - Apply zero tolerance policy in regard of sexism and racism (also to senior staff members)
  - Foster collaboration instead of competition
  - Still keep some covid restrictions (*e.g.* max 2 people in elevator)
  - More contact between GS and PhD student (initiated by GS)