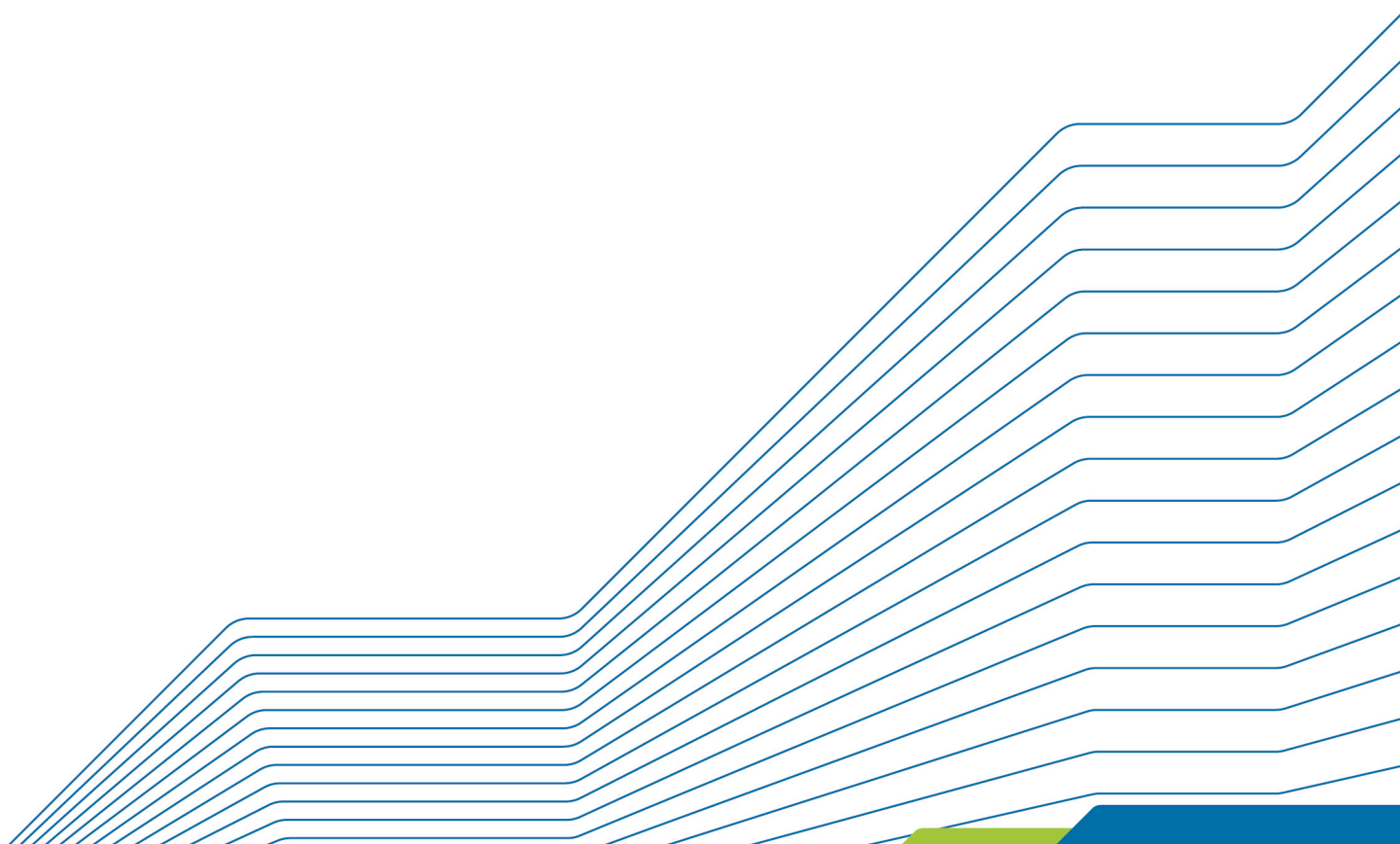


PhD survey 2017

report on the results of the fifth wave of the
Helmholtz Juniors PhD survey
from spring 2017

24/02/2018 (2nd edition)



Summary

This report presents the results of the fifth wave of the *Helmholtz Juniors PhD survey* conducted in spring 2017. A total of 1399 doctoral researchers at 17 Helmholtz centers participated, corresponding to an overall participation rate of 23 %. Discussing this unique dataset allows capture of the general situation of doctoral researchers within the Helmholtz Association and, where possible, also at individual Helmholtz centers.

The main topics addressed in this report concern the doctoral project, the participants' funding and working conditions, supervision, and satisfaction regarding the previous topics. Overall, the results demonstrate that the Helmholtz Association provides a promising environment to start a scientific career. The general satisfaction of the participating doctoral researchers was very high, as more than 80 % indicated satisfaction with their decision to pursue a doctoral degree. Furthermore, more than 60 % indicated to be satisfied with their supervision. However, satisfaction regarding the work-life balance differs between the individual centers, though these differences are mostly explained by participants' funding type; those with a working contract are generally more satisfied with their work-life balance, than those with a stipend. This shows that the standards for doctoral researchers within the Helmholtz Association are not as equal as they could and should be.

The duration of funding and doctoral projects shows a large variability across the Helmholtz Association. More than two thirds of the participants estimated a total project duration of at least 3 to 3.5 years. This is often in contrast with the initial funding period, as 38 % of the participants indicated that financial support was guaranteed for less than three years at the beginning of the project. Considering that funding periods do not often exceed three years and projects seem to usually take longer, these discrepancies.

In general, results did not differ by gender (female vs. male) or nationality (German vs. non-German). Many international participants reported that language barriers complicated their integration within their center and /or working group. For example, nearly half of the international participants stated that not all of the important information was provided in a language they understood.

The Helmholtz Association's PhD guidelines define boundary conditions for the association's doctoral researchers and implement measures to ensure the quality of doctoral research. The use of the suggested formal requirements, such as supervision agreements, allows to partial estimation of the degree of the guidelines' implementation. These formal tools seem to be implemented to a certain degree at all centers participating in the survey, as two thirds of the participants had

a thesis committee and half indicated having signed a supervision agreement. However, at a couple of centers large portions of the participants were unaware of the existence of these tools. Additionally, it is difficult to deduce the guidelines' impact on the daily working conditions of doctoral researchers.

The *Helmholtz Juniors Survey Group*, December 2017

Jana Geuer (AWI), Lara Grünig (HZG), Mirjana Gusic (HMGU), Meike Klieschies (GEOMAR), Axel Molle (HZB), Lisa Samrock (GEOMAR), Danja Sarink (DKFZ) and Bernhard Schuck (GFZ)

The spokespersons of the *Helmholtz Juniors*

Giulia Caglio (MDC) and Konstantin Kuhne (HZDR)

Acknowledgments

We thank Livia Nardini (GFZ), Dagmara Rusiecka (GEOMAR) and Sarah Stenton (HMGU) for their constructive feedback that helped to improve the report. We also like to thank Sophie Crux (DZNE) and Patrick Fopp (DLR) from the 2016 survey group who were key in setting up the survey.

Contents

1. Introduction	5
2. Results	7
2.1. Participants' background and participation rate	7
2.2. Affiliation and cooperation of doctoral researchers with universities	7
2.3. Doctoral research project	10
2.3.1. Field of research	10
2.3.2. Project duration	10
2.3.3. Type of dissertation	12
2.3.4. Project-related publications: requirements and output	12
2.3.5. Conference participation	16
2.3.6. Cooperation with external partners	18
2.4. Satisfaction, mental stress and considerations to resign	19
2.4.1. Satisfaction	19
2.4.2. Mental aspects	20
2.4.3. Considerations to resign from the doctoral research project	23
2.5. Supervision	24
2.5.1. Formal framework: supervision agreements and thesis committees	24
2.5.2. Supervisors	25
2.5.3. Satisfaction with supervision	28
2.5.4. Suggestions to improve supervision	29
2.6. Funding: contracts, stipends and related working conditions	30
2.6.1. Type of funding	30
2.6.2. Income and extra payments	31
2.6.3. Initial duration of funding and potential extensions	33
2.6.4. Workload and vacation days	34
2.7. Doctoral researchers with children	36
2.8. International doctoral researchers	39
2.9. Graduate Schools	41
2.10. Research abroad	45
2.11. Infrastructure	47
2.12. Career perspectives	51
3. Discussion	55
3.1. Strengths and limitations of this survey	55
3.2. Type of funding	56
3.3. Working conditions	57

3.4. Duration of project and funding	58
3.5. Doctoral researchers with children	60
3.6. International doctoral researchers	61
3.7. Participants' awareness of working and graduation conditions	61
3.8. Implementation of PhD guidelines	62
4. Concluding remarks	63
List of Figures	65
A. Appendix	67
A.1. Changelog	68
A.2. Supplementary figure: distribution of working time	68
A.3. Supplementary figure: career perspectives	69
A.4. Verfahrensverzeichnis	70
A.5. Datenschutzerklärung	73
A.6. Questionnaire	76
A.7. HeJu Statement on working conditions	94

1. Introduction

Why do the *Helmholtz Juniors* conduct this survey?

The *Helmholtz Juniors*, founded in 2005, represent currently more than 6,500 doctoral researchers pursuing a doctoral degree at one of the 18 Helmholtz centers, irrespective of their university affiliation and contract or funding situation. *Helmholtz Juniors* are organized in four working groups, focusing on *Working Conditions*, *Events*, *Communication*, and *Survey*. After 2008, 2010, 2012 and 2014, the fifth wave of the *Helmholtz Juniors PhD survey* was organized by the 2016 and 2017 working group *Survey*. In this report we present the results of this latest survey

The survey was initially introduced to identify aims that the *Helmholtz Juniors* should pursue. Regular re-editions of the survey track the development of the quality of doctoral researchers' education and satisfaction. Since its first wave in 2008, the survey has been aiming to provide a status report of the doctoral researcher's general situation across the Helmholtz Association. This allows the *Helmholtz Juniors* and the representatives at the individual centers to improve the representation of the interests of doctoral researchers. This empirical basis enables targeted and constructive discussions to develop solutions for both, Helmholtz-wide topics and center-specific challenges.

Who could participate and how was it possible?

The survey was run between February and May 2017. All doctoral researchers working at any of the Helmholtz centers were able to participate in the survey. This included those funded by external stipends (i.e. stipends not provided by Helmholtz Association or its centers), those working on collaborative projects, and those with supervisors at a Helmholtz center. The survey was hosted on the platform Unipark of QuestBack AG.

We aimed to reach as many doctoral researchers as possible, therefore the distribution of the survey invitation and the subsequent reminders occurred through multiple channels at 17 out of 18 centers, with the help of the local *Helmholtz Juniors*, graduate schools, and human resources departments. The invitation email and subsequent emails included a non-personalized link providing access to the online survey platform, which was open between 24th of February and 1st of May 2017. The *Helmholtz Juniors Communication Group* also advertised the survey through social networks (Twitter and Facebook). As the participation link was non-personalized, it was not posted on social media; we instead referred those interested to our invitation emails or to contact us directly. As stated in the *Verfahrensverzeichnis* and the *Datenschutzerklärung* of the survey (see appendix A.4 and A.5), identifying information (e.g. IP address) were not stored to ensure participants' anonymity. The entire survey process was conducted according to the current German federal data protection law (§11 BDSG).

Which topics did the survey address?

The questions of the 2017 *Helmholtz Juniors survey* were mostly similar to those of the previous surveys. Where appropriate, questions were amended for clarity and / or to account for recent

developments. A total of 88 questions (see complete questionnaire in appendix A.6) addressed twelve topics:

- personal background
- university
- doctoral project
- satisfaction
- supervision
- funding and working conditions
- doctoral researchers with children (shown only to those who indicated having children)
- international doctoral researchers (shown only to ‘non-German EU’ and ‘non-EU’ participants)
- graduate schools (shown only to those indicating having access to a graduate school)
- research abroad
- infrastructure
- career perspectives

Questions could be answered by selecting either single- or multiple-choices and indicating (dis)approval with a suggested statement. Sometimes there was the additional option to give free-text answers or comments. The estimated time to complete the full survey was 30 minutes.

How does this report present the results?

Prior to the analysis, survey data were processed where necessary, e.g. it was checked that questions for international participants were answered only by international doctoral researchers. Free-text answers were processed by two group members. Where applicable, they were included into existing categories (e.g. “China Scholarship Council scholarships” were included into the category ‘external stipends’). In case of a sufficient number of answers, they were grouped in a new category.

Results are most commonly presented as simple frequencies in stacked column charts summing up to 100 %. This allows display of the distribution of individual answers at the center-level and to compare individual centers with each other and across the entire Helmholtz Association. Where relevant, results were stratified into subgroups (e.g. field of research, funding type) and cross-tabulations were used to compare different questions.

Most results in this report are presented for the different centers (“1 - 17”) and also for the whole Helmholtz Association (“HGF”). This report will be made publicly available and, following a specific request from the centers, does not name individual centers. Centers were assigned a randomized numerical code to enable comparison of center-specific results throughout this report.

2. Results

2.1. Participants' background and participation rate

A total of 1399 doctoral researchers participated in the survey. This corresponds to an overall participation rate of 23 %, evenly split between men and women. Participation rates varied substantially between centers, ranging from 11 % to 65 % (Fig.2.1). The gender distribution likewise varied across centers, though this can be explained in part by gender differences between research fields. Two-thirds of participants were German and about one-third were international doctoral researchers (16 % European and 20 % non-European), with the proportion of international doctoral researchers ranging from 21 % to 58 % between centers (see section 2.8)

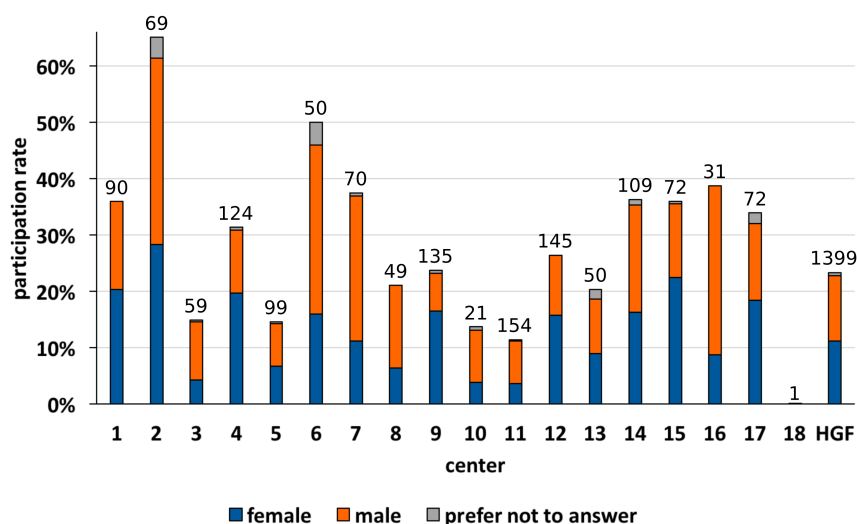


Figure 2.1.: Participation rate by center, classified according to gender. Numbers on top of bars give frequency of participants.

More than 60 % of participants were between 26 and 29 years old. Doctoral researchers younger than 26 and older than 29 years account for 11 % and 24 %, respectively (Fig. 2.2).

2.2. Affiliation and cooperation of doctoral researchers with universities

Requirements for submission and defense of PhD theses are set by the university awarding the degree. In addition to registering with a university, doctoral researchers usually have the opportunity to matriculate at a university, allowing them to take classes and courses. Although universities are often not directly related to Helmholtz centers (or within the scope of *Helmholtz Juniors'* work), these aspects are an important part of a PhD and were included in the survey.

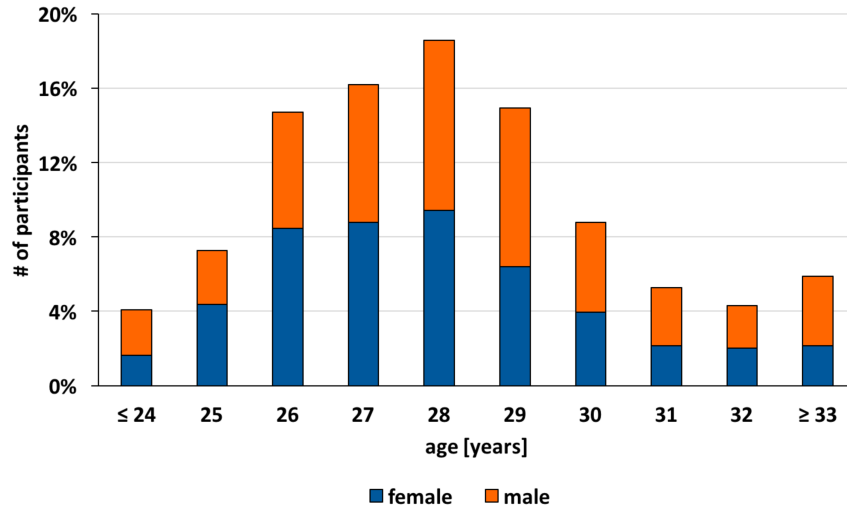


Figure 2.2.: Age distribution of doctoral researchers.

More than 80 % of the doctoral researchers within the Helmholtz Association were affiliated with one of 22 universities (Fig. 2.3). Two thirds of participants were also matriculated at a university. Irrespective of matriculation, more than 60 % of doctoral researchers were actively cooperating in some way with a university.

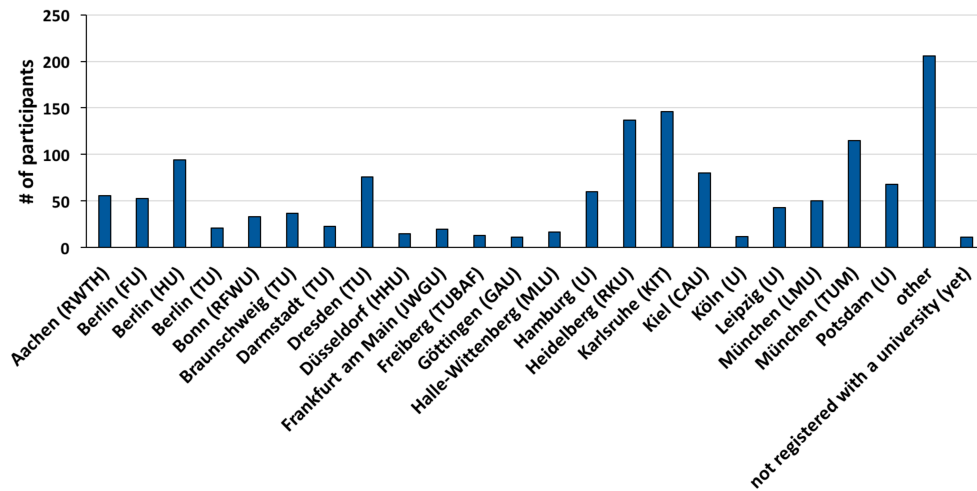


Figure 2.3.: University affiliation of doctoral researchers.

The degree of cooperation between doctoral researchers and their university, among all participants and per Helmholtz center, is shown in figure 2.4. Most commonly participants worked with their university within the frame of their doctoral research project (39 %), followed by the use of libraries (38 %) and the supervision of students (e.g. bachelor or master thesis; 34 %). A quarter attended classes. Another quarter taught themselves. Further types of active cooperation were the use of offices (24 %) and laboratories (20 %). 18 % of the respondents indicated that they cooperated actively with an university in a project other than their doctoral research project. Generally, the amount of cooperation between participants and their university differs substantially across centers (see figure 2.4).

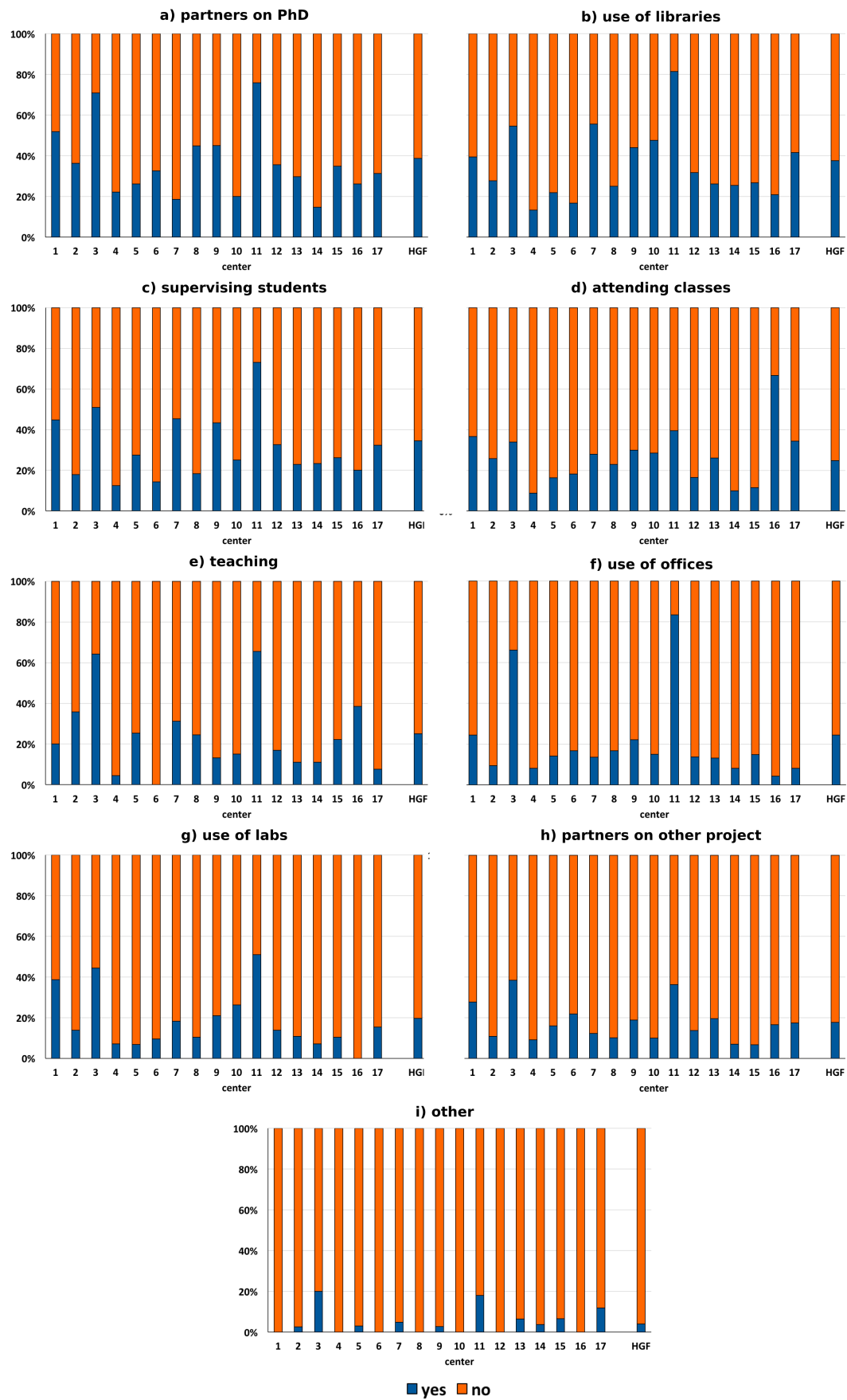


Figure 2.4.: Types of cooperation with university by center. Participants answered the following question: “Are you in active cooperation with your university?” and subsequently specified the type of cooperation (multiple answers were possible).

2.3. Doctoral research project

2.3.1. Field of research

The Helmholtz Association combines 18 centers, and spans a number of very different research fields. These fields range from aeronautics, space, matter, and transport to environment, energy, health and key technologies, offering doctoral projects in a multitude of different research topics.

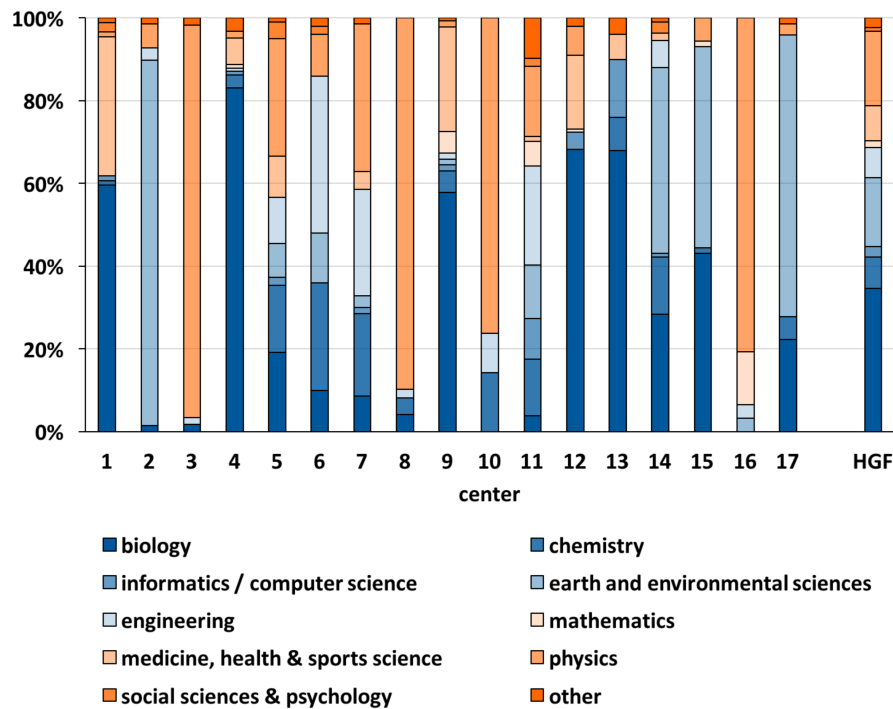


Figure 2.5.: Field of doctoral research by center.

Two thirds of the participants conducted their research in one of three different fields (Fig. 2.5): (I) biology (35 %), (II) physics (18 %) and (III) earth and environmental sciences (17 %). Further research fields include (IV) medicine, health and sports science (8 %), (V) chemistry (8 %) and (VI) engineering (7 %).

Female participants were more likely to pursue their research project in the fields of (I) biology, (II) medicine, health and sports science, (III) social sciences and psychology; male participants were over-represented in the fields of (I) physics, (II) engineering and (III) informatics / computer science (Fig. 2.6).

2.3.2. Project duration

Usually, doctoral research projects are funded for a specified period of time; for third party funded projects three years are relatively common (e.g. BMBF, 2010¹). However, there are strong indications that the actual time needed to complete a doctoral research project does not always correspond to the funding period². The actual project length depends on a variety of factors, which include how realistic the time planned for individual working packages of the

¹<https://www.bmbf.de/foerderungen/bekanntmachung-493.html>

²BuWin 2017: Bundesbericht Wissenschaftlicher Nachwuchs 2017 (<http://www.buwin.de/>)

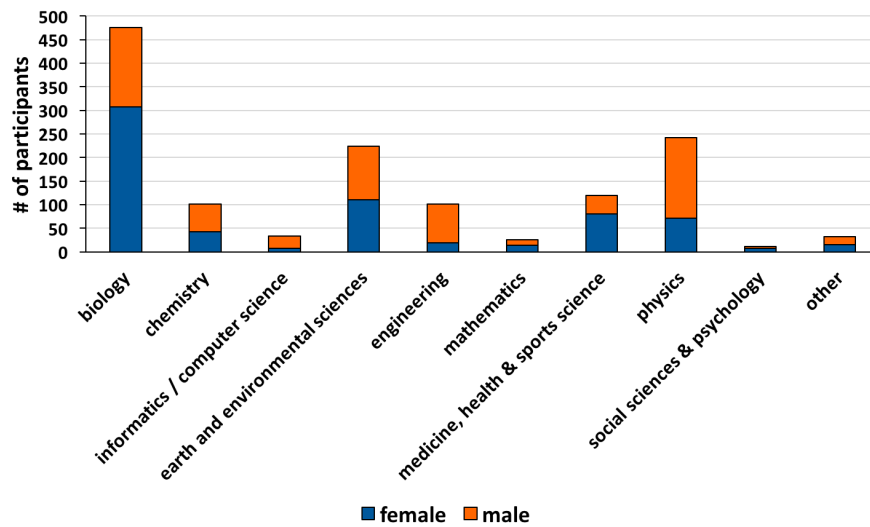


Figure 2.6.: Field of doctoral research by gender.

project is, technical challenges which might arise during the course of the project, the field of study, and on the doctoral researchers' individual situations.

28 % of the respondents were within the first year of their project, 24 % were in the second and 23 % in the third year (Fig. 2.7 a). 11 % of the participants indicated having worked on their project for 3 to 3.5 years. The variation between individual centers was high: 56 % and 94 % of the participants were in their first three years. On average, 14 % of participants indicated having worked more than 3.5 years on their project, with a range between individual centers from 0 % to 24 %.

Only a minority of participants (11 %) estimated to finish their project - submit their thesis - within three or less years (Fig. 2.7 b), 37 % expected to do so in 3 to 3.5 years, and 35 % in 3.5 to 4 years. Almost one fifth of the respondents (range: 0 % - 36 %) anticipated a project duration of more than four years. These numbers varied markedly between centers, where between 13 % to 90 % expected being able to submit their thesis in less than 3.5 years.

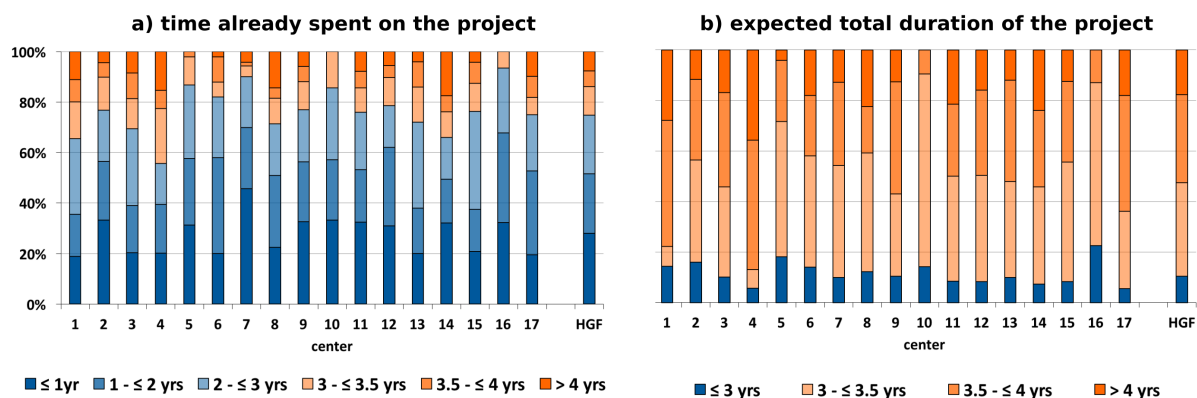


Figure 2.7.: (a) Time already spent on doctoral project and (b) expected total project duration.

Of those within the first year of their project up to 15 % (depending on the center) expected a total duration of up to three years. Almost 50 % of the participants in the first year estimated a total duration of up to 3.5 years. This figure of participants expecting a project duration of up to 3.5 years decreases to less than 40 % towards the end of the third year; a further decrease to

roughly 20 % could be observed close to a project duration of 3.5 years. Conversely, the number of those expecting a total project duration of more than 3.5 years increases from 22 % for those in the first year to almost 80 % for those being in their third year.

While 62 % (ranging from 41 % to 83 % between centers) of the respondents had a written project outline within 6 months after the start of the project and one third (range 11 % to 51 %) had none, 4 % (up to 19 %) were not aware if they had a project outline (Fig. 2.8 a). 86 % of participants had a regular progress report, though the type of report (oral and / or written) varied between centers (Fig. 2.8 b). Between 3 % and 23 % (average 11 %) of the respondents had no progress report and between 1 % and 10 % (average 4 %) were unaware if they had a progress report.

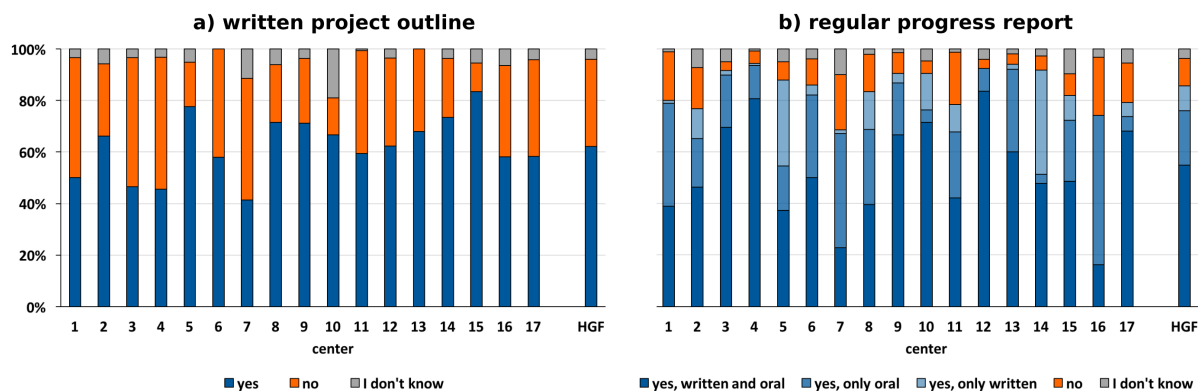


Figure 2.8.: (a) Written project outline within first 6 month. (b) Regular progress report.

Participants' estimated project duration was in general unrelated to the presence of a written project outline within 6 months after the start of the project. This was also true for the estimated project duration and the presence of a regular progress report. However, 50 % of those participants having anticipated a project duration of more than four years were missing a project outline. The variation among centers was large.

2.3.3. Type of dissertation

Traditionally, a doctoral thesis is submitted as a monograph. This was also the most common type of dissertation among survey participants; 57 % (range 17 % to 88 %) planned to write a monograph (Fig. 2.9). Alternatively, a thesis can be structured as a number of peer-reviewed publications framed by an introduction and a discussion. 27 % (range 0 % - 75 %) of participants aimed to write such a cumulative thesis (or thesis by publication). 16 % (range 3 % to 33 %) did not yet know what type their dissertation would be. There was no correlation between anticipated project duration and type of dissertation.

2.3.4. Project-related publications: requirements and output

The requirements of German universities for a cumulative dissertation may differ greatly in amount and status of publications. For monographs, these requirements are usually less strict.

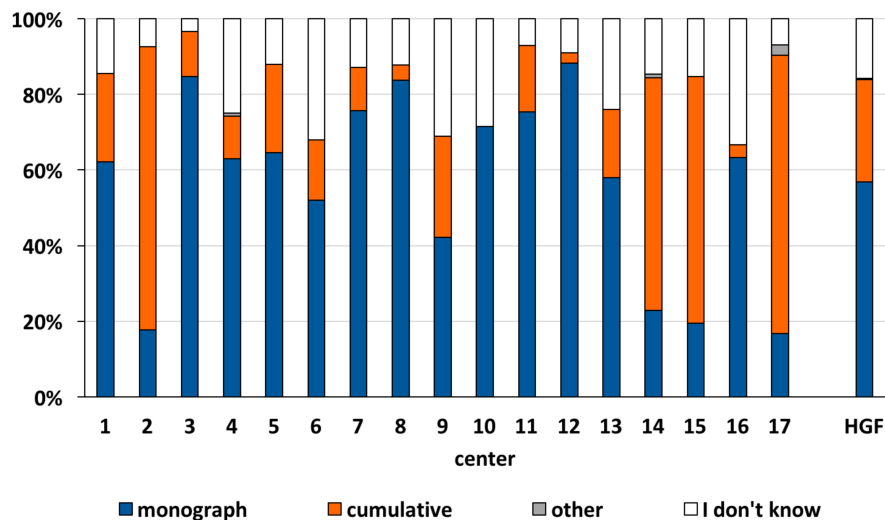


Figure 2.9.: Planned type of dissertation.

Peer-reviewed publications

Almost half of the participants indicated that their university requires at least one peer-reviewed publication to graduate (Fig. 2.10 a). Additionally, 25 % of the participants had no (range 6 % to 55 %), or were unaware (up to 48 %) of any requirements to graduate.

10 % of those considering submission of a monograph reported that their university requires them to have at least three peer-reviewed publications (range 0 % to 50 %); 7 % were required to have two and 18 % were required to have one peer-reviewed publication (Fig. 2.10 b). Of the respondents who will write a cumulative dissertation, 60 % were required to have at least three peer-reviewed publications (Fig. 2.10 c).

The 682 participants who needed to have at least one publication to graduate were asked how many of these publications needed to be first author publications: 46 % (up to 90 %) did not need to be first-author, 29 % (up to 78 %) needed first-authorship on one publication, 13 % (up to 75 %) needed two first-author publications and 2 % (up to 25 %) needed at least three publications as first author (Fig. 2.11 a). The majority (47 %; up to 100 %) of the participants, who planned to submit a monograph and were required to have at least one peer-reviewed publication as first author, followed by 14 % with two (up to 66 %) and at least three (up to 50 %) first-author peer-reviewed publications, respectively (Fig. 2.11 b). The number of required peer-reviewed publications in first authorship increases for participants planning to graduate by publication: one is required for 16 % (up to 67 %), two for 32 % (up to 80 %) and at least three for 41 % (100 %) of the respondents (Fig. 2.11 c). Up to 17 % (average 2 %) of the respondents aiming for graduation by publication indicated that there was no need to be first author of a peer-reviewed publication.

Other publications and presentations

In addition to peer-reviewed publications, participants were asked about the number, if any, of other types of publications and (poster) presentations required for graduation. 5 % (range 1 % - 19 %) and 32 % (range 13 % - 58 %) of participants indicated they would need at least one 'other' type of publication (Fig. 2.12 a) or (poster) presentation (Fig. 2.12 b).

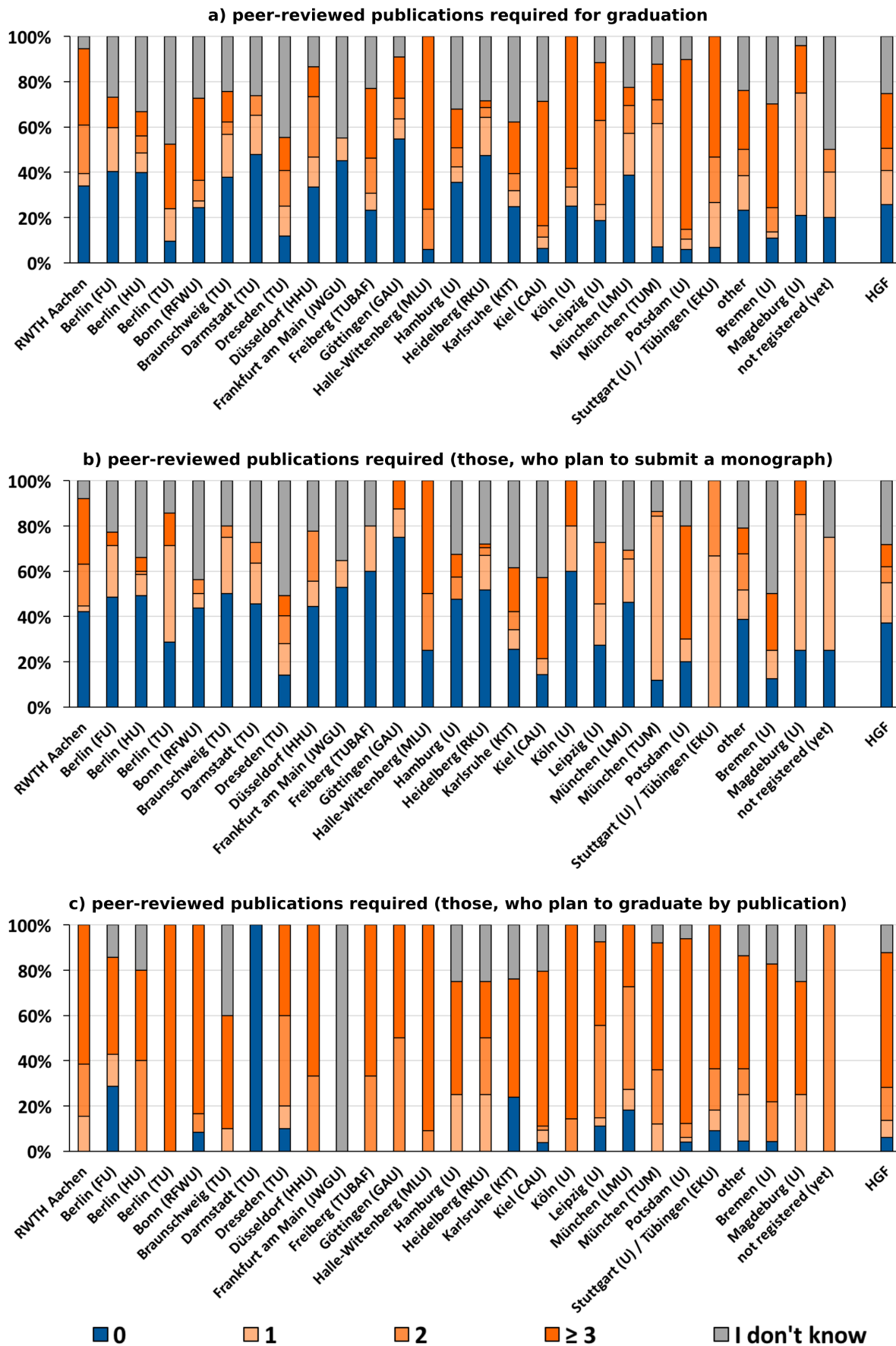


Figure 2.10.: (a) Number of peer-reviewed publications as first author required by the universities participants were registered with. Required publications according to planned type of dissertation: (b) monograph and (c) cumulative.

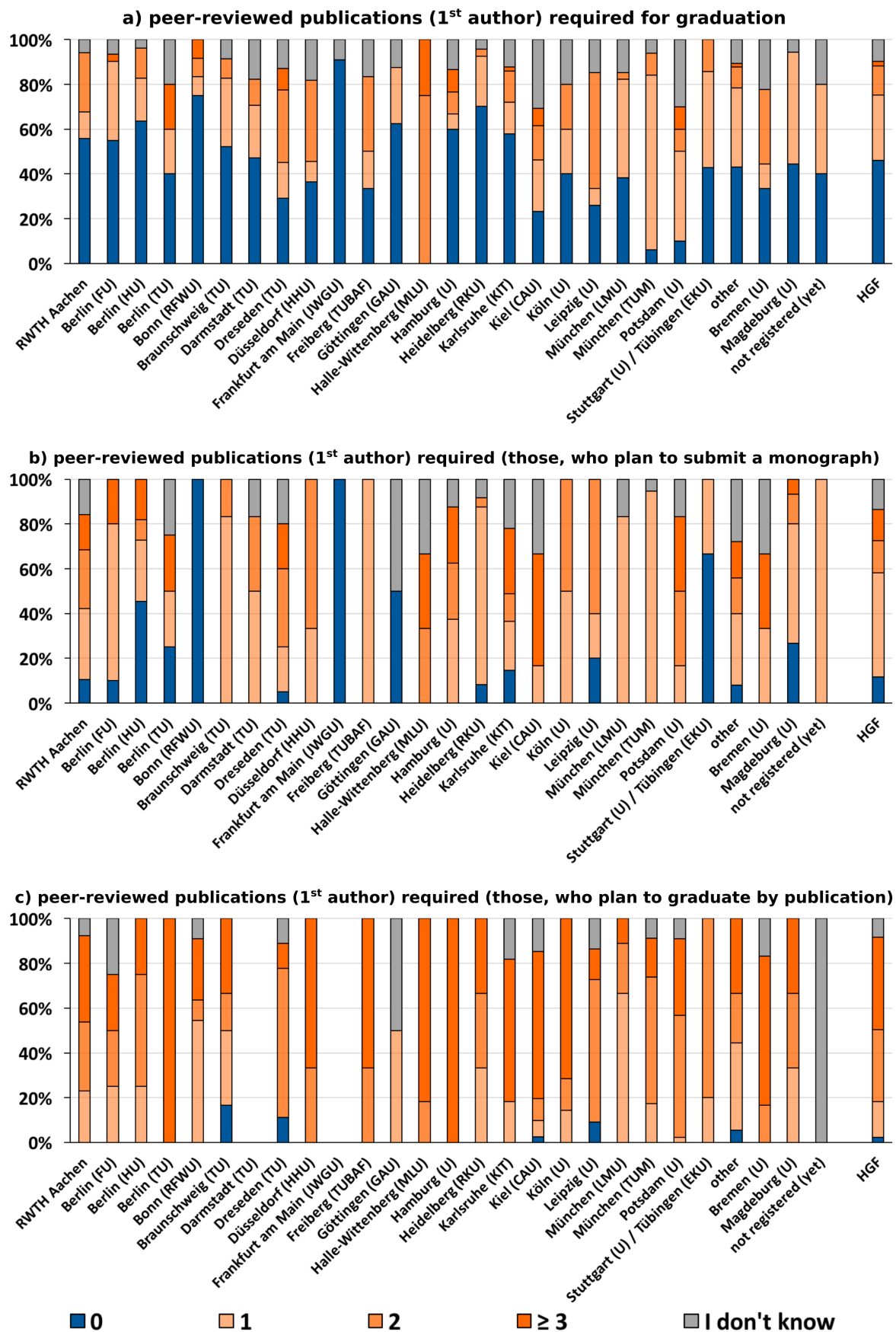


Figure 2.11.: (a) Required peer-reviewed publications as first author for graduation by the universities the participants were registered. Required publications according to planned type of dissertation: (b) monograph and (c) cumulative.

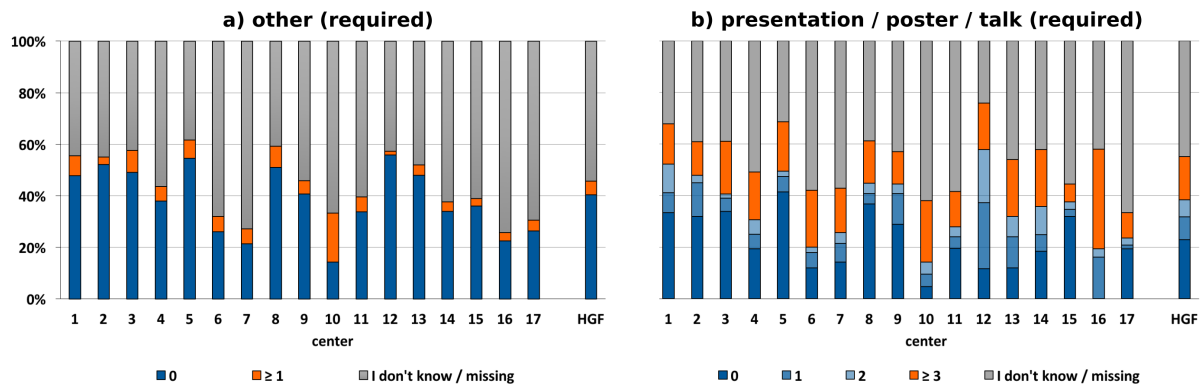


Figure 2.12.: Number of (a) other publications and (b) presentations / posters / talks required for graduation different from peer-review.

Analyzed with regard to intended type of dissertation, results for the varying types of publications apart from peer-reviewed ones and presentations required did not differ between those who planned to submit a monograph and those aiming to graduate by publication (Figs. 2.13 a–d).

Current number of publications

38 % of the participants indicated to have at least one publication: 20 % had one, 9 % had two and another 9 % had at least three peer-reviewed publications. With regard to type of dissertation, figures are slightly higher but differ only marginally between monograph and cumulative dissertation (Fig. 2.13 a and b), i.e. those not knowing the type of their dissertation yet tend to have less publications. 28 % of the participants recorded first authorship on at least one peer-reviewed publication: 19 % had one, 6 % had two and 3 % had three first-author publications. Of the 218 participants having first-author publications and aiming to submit a monograph, 50 % had one, 15 % had two and 5 % had at least three paper. This distribution changes only slightly for the 135 participants with first-author publications working on a cumulative dissertation: 51 % had one, 19 % had two and 14 % had at least three publications (Fig. 2.13 c and d).

Almost three quarters of those participants who worked on their project for less than three years, had no peer-reviewed publication yet, while 17 % had one, 6 % had two and 5 % had at least three publications. The number of peer-reviewed publications increases with increasing project duration: of those having spent more than four years on their project, 25 % had zero publications, 26 % had one, 22 % had two and 26 % had at least three publications (Fig. 2.13 e). The same is applies to peer-reviewed publications in first-authorship (Fig. 2.13 f).

A relevant trend regarding gender, nationality or the enrollment status at a graduate school with the numbers of publications could not be observed.

2.3.5. Conference participation

Apart from presenting their work through publications, the Helmholtz Association's PhD guidelines³ encourage doctoral researchers to participate in national as well as international conferences. Conferences are one of the major scientific tools to communicate and present personal scientific work. They are considered an important aspect especially in scientific careers. International

³Helmholtz Association (2015): Guidelines for the completion of PhD projects within the Helmholtz Association

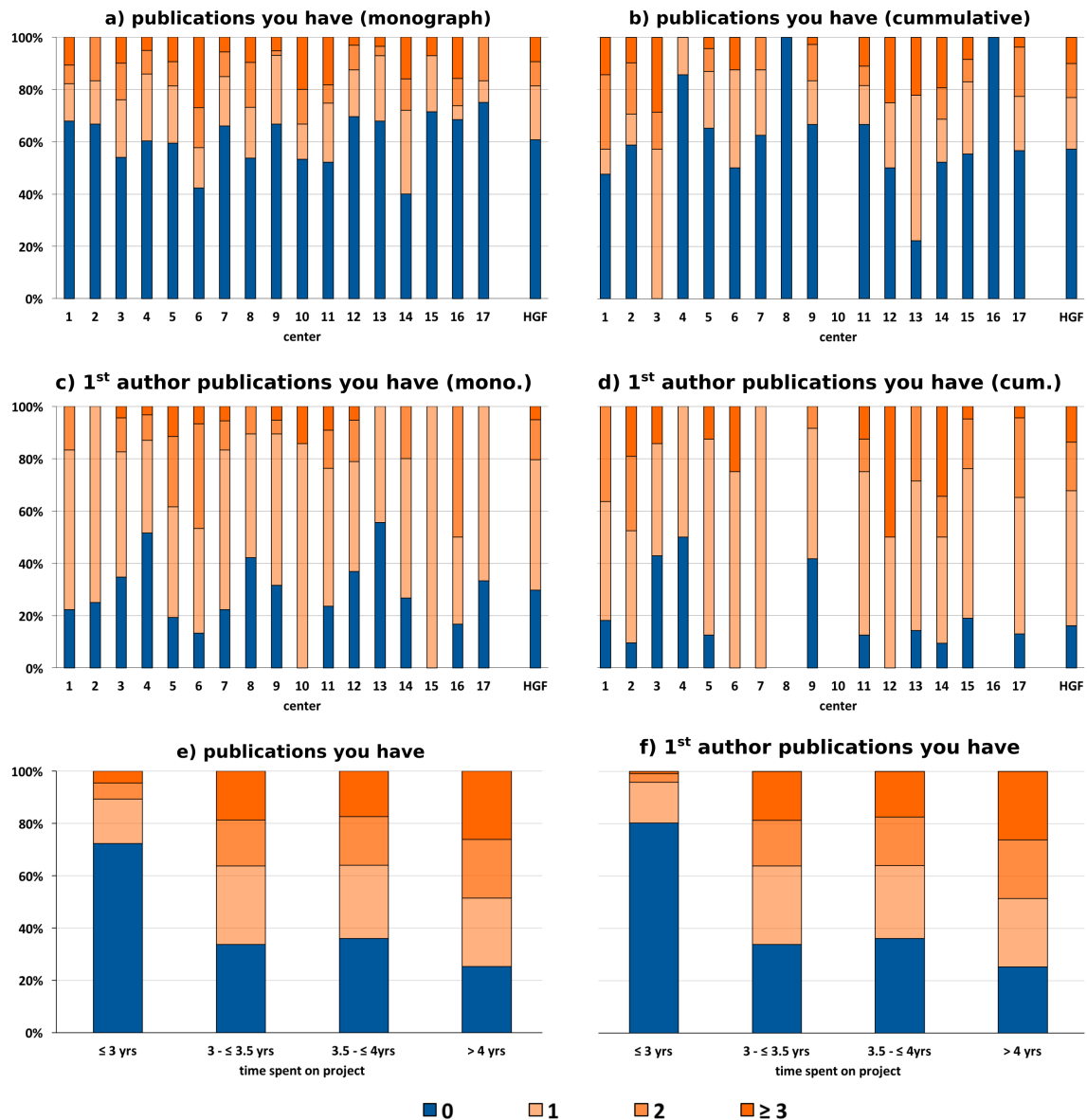


Figure 2.13.: Number of peer-reviewed publications of those planning (a) to submit a monograph and (b) to graduate by publication and number of first author publications of those aiming for (c) a monograph and (d) a cumulative dissertation. Amount of peer-reviewed publications as (e) co-author and (f) first author as function of time already spent on the project.

conferences in particular help scientists to connect and share their ideas and insights with fellow colleagues from all over the world.

Two thirds of the respondents indicated participation in an international conference, workshop or course in the frame of their research project (Fig. 2.14 a). In total, one third still had not attended any international event. Conference participation increases with project duration. There was no significant difference with regard to gender, nationality or enrollment with a graduate school. Overall, these numbers are comparable for participation in national events (Fig. 2.14 b). Despite some differences between individual centers, the variance is not significant.

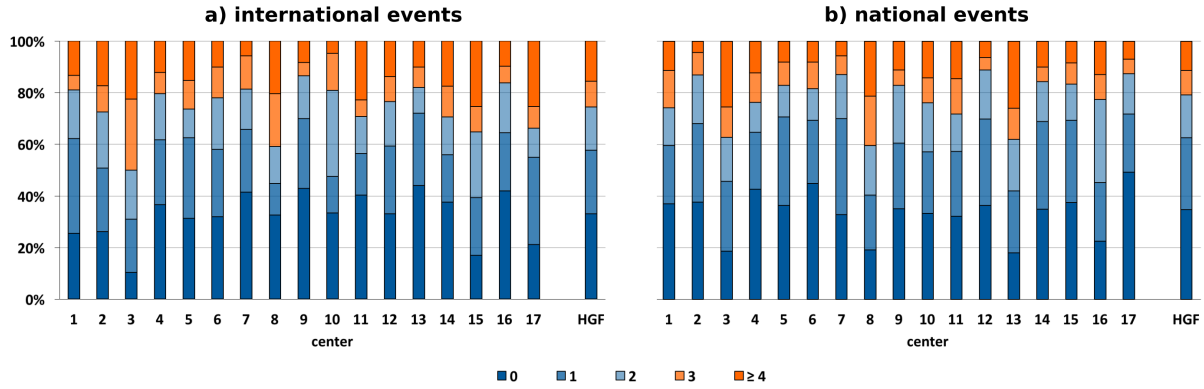


Figure 2.14.: Participation at (a) international and (b) national conferences, workshops and courses.

2.3.6. Cooperation with external partners

Doctoral research projects are typically situated in innovative research areas and often require interdisciplinary approaches to succeed. In this regard, collaboration with external partners can help doctoral researchers with their particular research questions and offer them access to facilities which may not be available at the centers they are working at on an everyday basis. Depending on the project, partners may also fund doctoral research projects.

17 % (range: 8 % to 26 %) of the participants were actively cooperating, manifested as regular exchange or joint work, for their project with scientists outside their center (Fig. 2.15 a). On the other hand, 47 % (range: 37 % - 60 %) did not have such a cooperation, and up to 42 % did not know if they had such a cooperation within their research project.

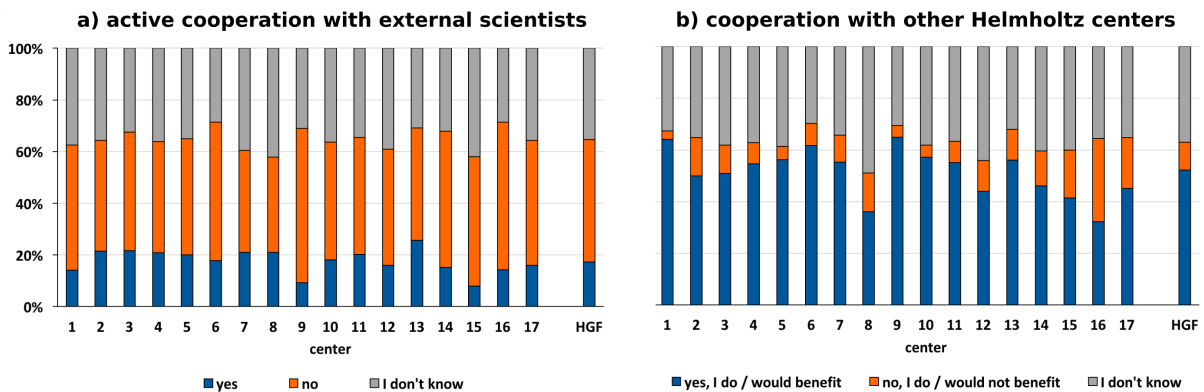


Figure 2.15.: Cooperation with external partners within the frame of the doctoral research project. (a) Existing cooperation with scientists from outside the Helmholtz center. (b) Actual or expected benefit from existing cooperation with another Helmholtz center.

When specified as cooperation with other Helmholtz centers, more than half of the respondents indicated that their work benefited or would benefit from such a cooperation within the association (Fig. 2.15 b). Between 3 % and 32 % did not see any (potential) benefit in their cooperation with another Helmholtz center.

2.4. Satisfaction, mental stress and considerations to resign

2.4.1. Satisfaction

The doctoral research period is the transition from higher education to the onset of a professional career. This period is characterized by an intense development of professional and personal skills, it qualifies doctoral researchers for senior positions in academia, industry, and society. Despite the complexity of this process, being controlled by a multitude of factors, this survey tried to condense the evaluation with regard to the satisfaction of early-stage researchers to a few questions. These are the general satisfaction with the decision to pursue a doctoral degree, the satisfaction with the project, with the personal work-life-balance, the payment situation and the supervision (Fig. 2.16). The latter is presented only shortly in this section and in greater detail in section 2.5.3.

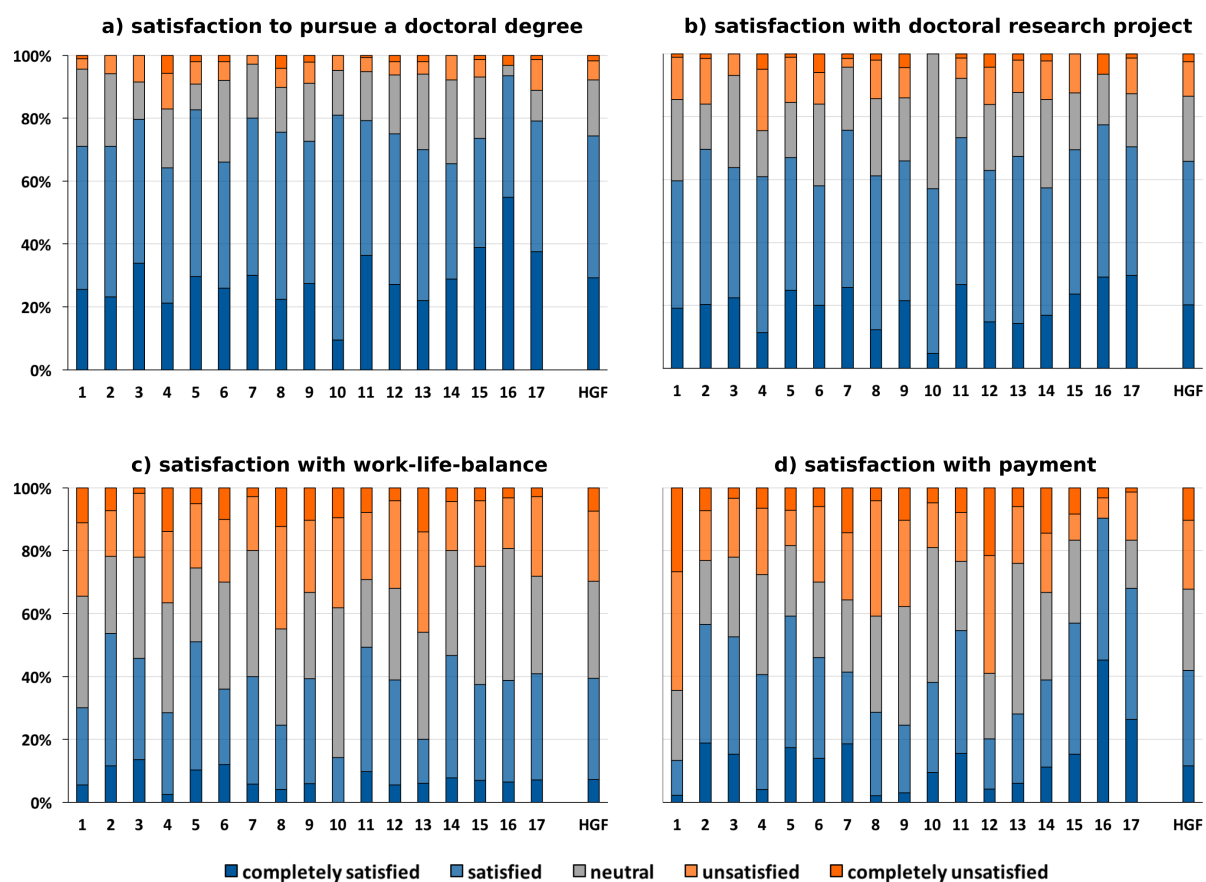


Figure 2.16.: Satisfaction of doctoral researchers.

As shown in figure 2.16 a, doctoral researchers were generally satisfied with their decision to pursue a doctoral degree; 29 % of participants were completely satisfied and 45 % were satisfied, while only 8 % were (completely) unsatisfied. Between centers (complete) satisfaction ranged from 64 % to 94 %, with participants in center 16 being notably satisfied with their decision to pursue a PhD. Looking at more specific parameters, two thirds of participants were (completely) satisfied with their doctoral research project⁴ (Fig. 2.16 b). Participants were more ambiguous when it came to satisfaction with work-life-balance and payment (Figs. 2.16 c and d); 40 % said they were (completely) satisfied and nearly 30 % were neutral, hence indecisive, with regard to either. There

⁴Please note that there was no question asking how often a project had been changed.

was substantial variation between centers, as up to 17 % of the participants indicated complete satisfaction with work-life balance compared to 2 % to 26 % that were completely unsatisfied. With regard to payment the range was from 2 % to 45 % for complete satisfaction and between 1 % and 27 % for complete dissatisfaction.

These results are certainly dependent on a number of factors, including how long participants were working on their project, supervision, type of contract, etc. One example: those working in the fields of engineering and physics were most often satisfied with their payment and those in life sciences least satisfied. Comparing monthly net incomes between fields showed that those in engineering and physics had a higher income (Fig. 2.30), which would explain the difference in satisfaction with payment.

In general 91 % of the respondents would recommend working on a doctoral research project at their center to a friend (Fig. 2.17). However, only 41 % would do this to all of their friends, 4 % only to their German-speaking ones and 47 % with further reservations. Although this view is still valid in general, there are pronounced differences with regard to the individual centers.

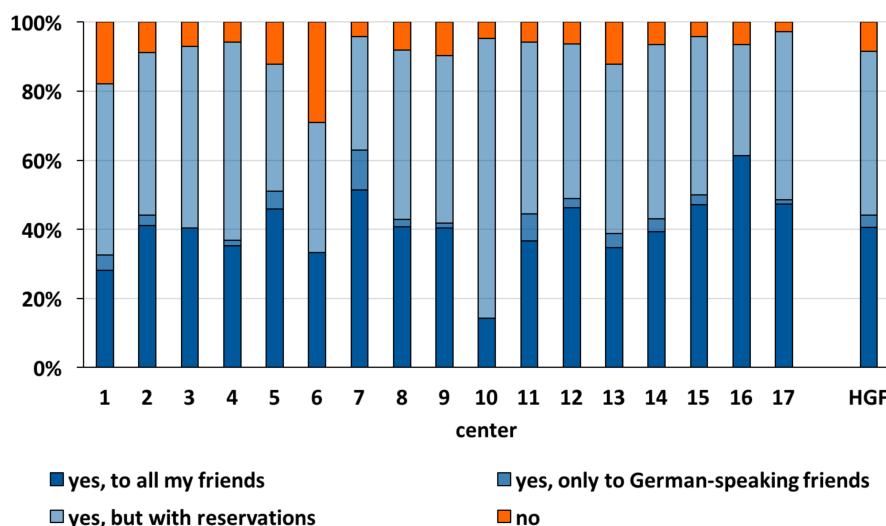


Figure 2.17.: Answers to the question “Would you recommend doing a doctoral research project at your center to a friend?”

2.4.2. Mental aspects

Pursuing a doctoral degree implies not only the acquisition of a variety of professional and personal skills, such as to learn and demonstrate the ability to work in science independently, but also has potential for trouble arising from the project itself, e.g. failed experiments or extremely short deadlines. In addition, the period of the doctoral research project typically coincides with the founding of a family, adding personal challenges to the professional ones. Mastering these tasks requires sound skills. This section aims to provide insight into the participants’ capacity to deal with these challenges.

Almost three fifths of the respondents felt (very) often confident to handle their workload, followed by 31 % feeling confident only sometimes and 10 % feeling (almost) never confident to handle it (Fig. 2.18 a, left). While there is a certain degree of variability between the centers, confidence is generally high. The same is true with regard to the confidence to finish the doctoral

research project, where participants indicated a slightly higher level of confidence compared to the confidence to handle the workload (Fig. 2.18 b, left).

Answers to these questions on mental well-being vary with time such that the degree of confidence decreases from the beginning of the project with lowest levels being reached after 1.5 to 2.5 years, before they increase for those participants having worked on their project for 3 to 3.5 years (Figs. 2.18 a and b, right). However, after more than 3.5 years the level of confidence was lowest.

While 47 % of participants (almost) never felt unable to work on their PhD, 20 % did so (very) often, about one third of them having had this feeling sometimes (Fig. 2.18 c, left). Concerning the perception of being able to cope with all the things respondents had to do, answers followed the same trend (Fig. 2.18 d, left). However, 28 % of the respondents felt (very) often that they could not cope with these things and 35 % did so sometimes. This feeling increased with project duration (Figs. 2.18 c and d, right).

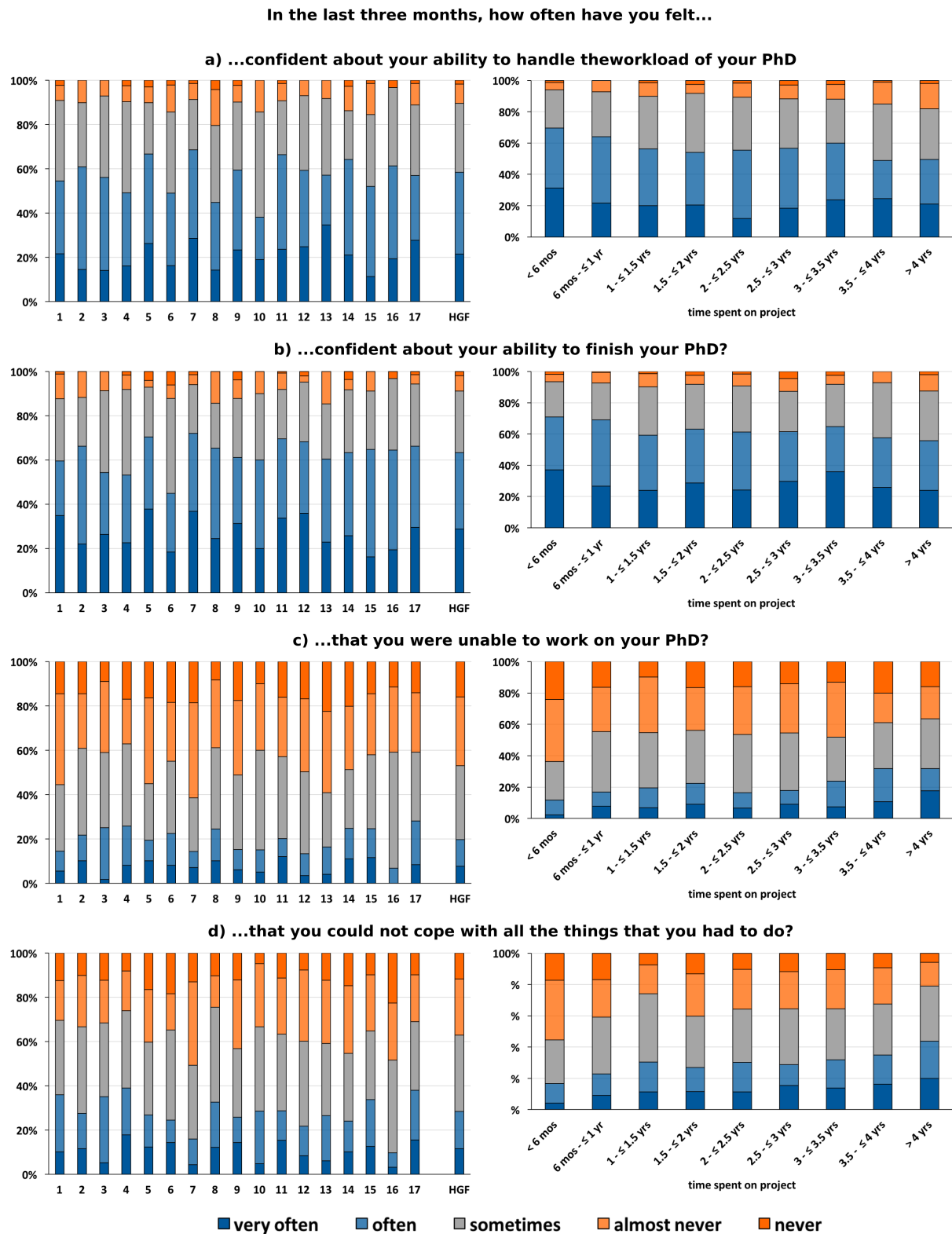


Figure 2.18.: Aspects addressing the mental well-being of participants. Left side shows results by center. Right side gives results stratified by the time already spent on the project.

2.4.3. Considerations to resign from the doctoral research project

A number of obstacles may occur during a PhD project, from personal reasons to problems with the project or funding shortages. PhD projects usually deal with very specific topics, that are sometimes risky, insufficiently funded or quite stressful. Reasons for doctoral researchers to consider resigning from their project can be as diverse as the projects themselves. The majority (63 %) of participants (almost) never considered resigning from their project (Fig 2.19 a). 22 % sometimes considered resigning and 14 % (very) often considered resigning. Figures for individual centers varied and are roughly up to 10 % above or below average values for the entire association with up to 13 % and 11 % having often or very often considered to resign.

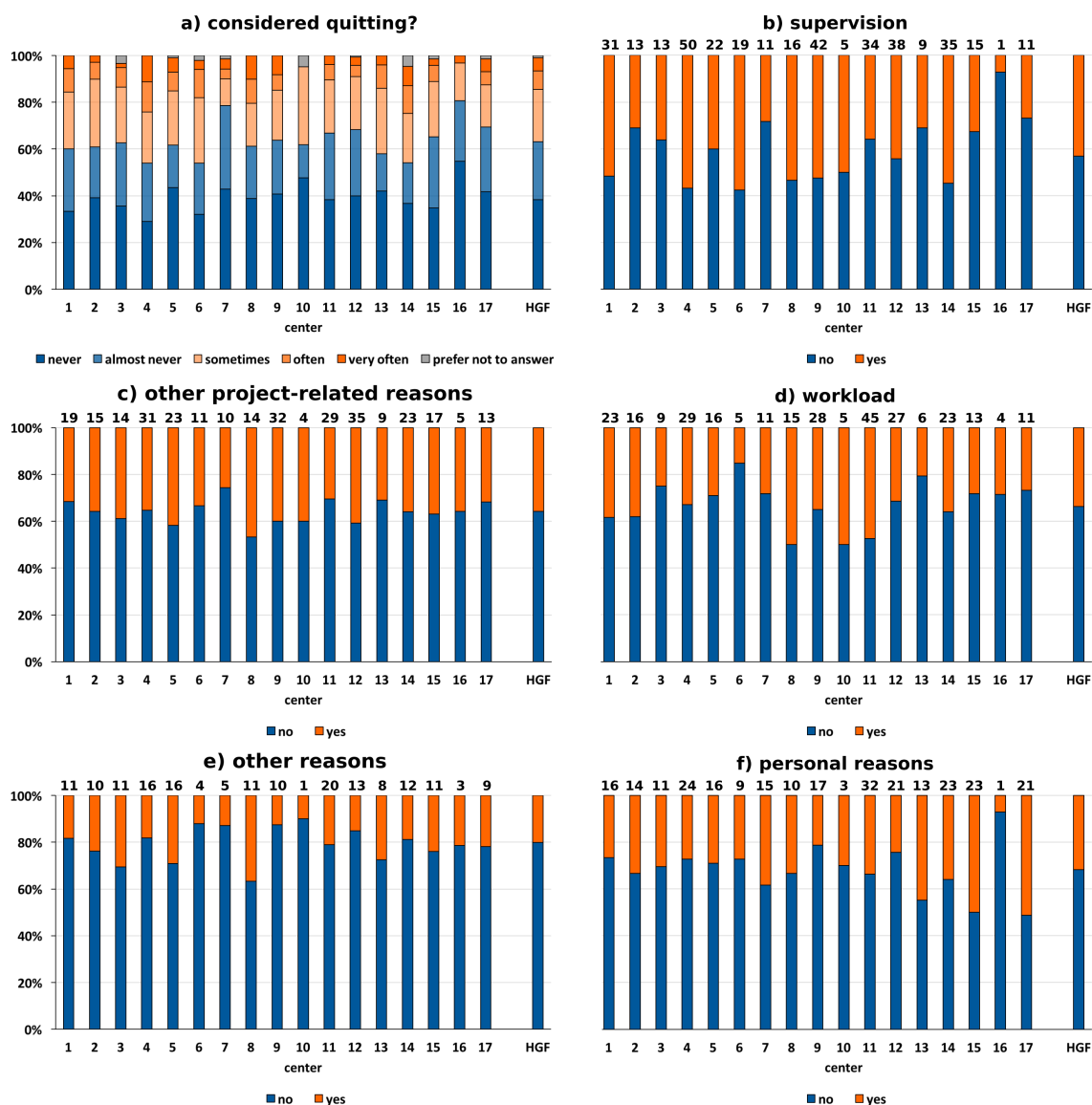


Figure 2.19.: (a) Answers to the question “Have you ever considered quitting your PhD?” (b - f) Reasons for participants to consider resigning from their doctoral research project; among those who ever considered resigning. Multiple answers were possible. Numbers on top of bars give number of respondents having answered with “yes”.

57 % of female participants (very) often considered resigning from from their project, compared to 41 % of male participants. Additionally, Germans were more likely to consider resigning than non-German participants (75 % and 66 %, respectively). The proportion of participants who had

considered resigning their doctoral project did not differ by how long participants had already been working on their project or the number of publications.

Except those respondents who indicated that they never considered to resign from their project, participants were asked to specify the reasons for their considerations. Please note that although the frequencies with regard to the entire association are sufficiently large, conclusions made for some centers might not fully reflect the actual situation due to low frequencies (Fig 2.19 b–f).

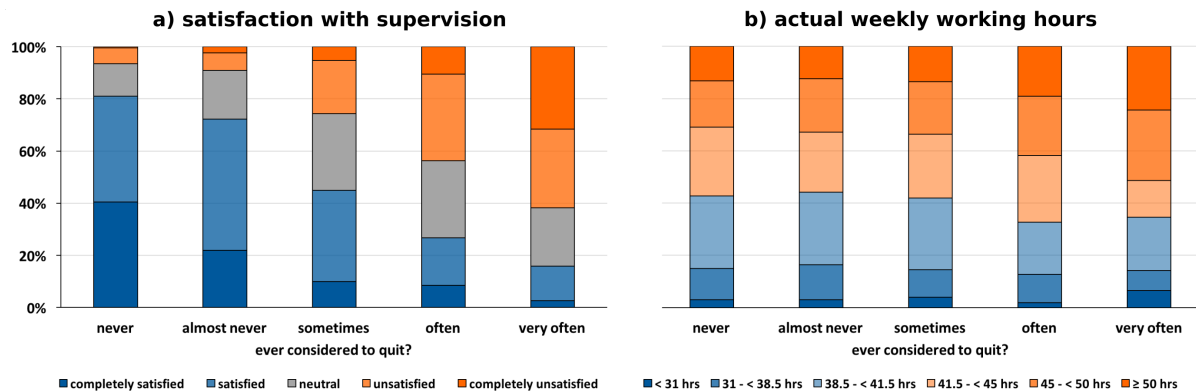


Figure 2.20.: Relationship between considerations to resign and (a) satisfaction with supervision as well as (b) workload.

The main reason to consider resigning was supervision (HGF: 43 %; range: 7 % to 58 %), followed by ‘other’ project-related reasons (HGF: 36 %; range: 26 % to 47 %), workload (HGF: 34 %; range: 15 % to 50 %), ‘other’ (HGF: 20 %; range: 10 % to 37 %) and personal reasons (HGF: 19 %; range: 7 % to 51 %).

As supervision was the most common reason for participants to consider resigning from their project (Fig. 2.19 b), a more detailed analysis of satisfaction in relation to likelihood to consider resigning follows: those who were less satisfied with their supervision were more likely to consider resigning (Fig. 2.20 a). Of those participants who had never considered to resign, more than 80 % were (completely) satisfied with their supervision, while only 16 % of those having very often considered to resign were (completely) satisfied (see 2.5 for more details on supervision).

Although differences are not as pronounced as by satisfaction with supervision, figure 2.20 b shows that participants who work longer hours were slightly more likely to have (very) often considered resigning from their doctoral research project than those with shorter working hours.

2.5. Supervision

2.5.1. Formal framework: supervision agreements and thesis committees

The Helmholtz Association’s PhD guidelines encourage the use of supervision agreements that clarify expectations, provide guidance, and ensure quality control for the doctoral research project.

On average, half of the participants signed one (Fig. 2.21 a). Nearly 40 % of participants (ranging from 14 % at center 16 to over 60 % at centers 3, 4, 10, and 17) did not know whether their center uses supervision agreements. Centers 9 and 16 stood out with having had a broad awareness and implementation of supervision agreements. A total of 75 participants indicated

that their center uses supervision agreements but they did not sign one, because their supervisor did not want to (23 %), they (also) did not want to (12 %), or due to other reasons (73 %).

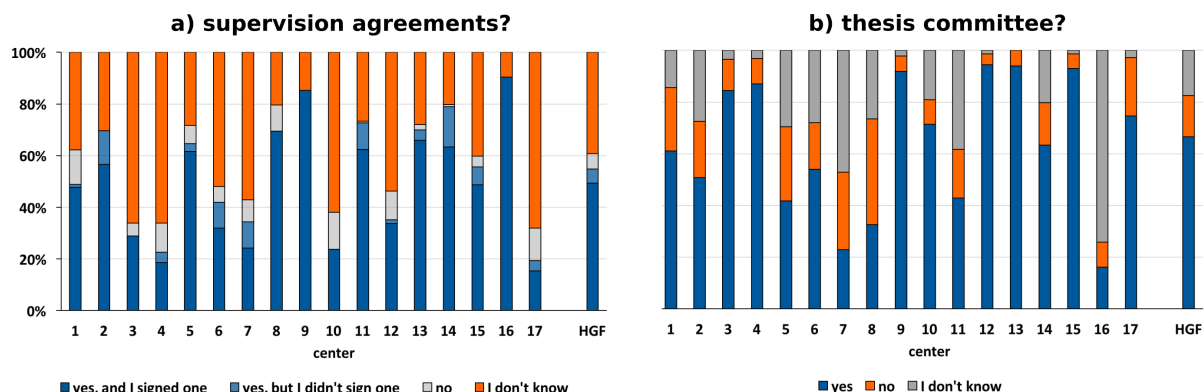


Figure 2.21.: Implementation of supervision agreements and (b) thesis committees.

In addition to supervision agreements, the Helmholtz PhD guidelines encourage thesis committees (i.e. frequent meetings of the doctoral researcher and (co-)supervisors) as a tool to further ensure (formal) supervision of doctoral researchers. Two thirds of participants indicated having a thesis committee, varying from 16 % at center 16 to 94 % at centers 12 and 13 (Fig. 2.21 b). 16 % of participants did not have a thesis committee and 17 % indicated they did not know whether they had a one. It is worth noting that this level of unawareness varied between centers; at centers 3, 4, 9, 12, 13, 15, and 17, the large majority of participants were aware of thesis committees (i.e. could indicate if they did or did not have one), whereas a substantial proportion of participants from centers 7, 11, and 16 did not know.

2.5.2. Supervisors

While, according to the Helmholtz PhD guidelines, doctoral researchers hold the main responsibility for their project, supervisors are responsible for the structural oversight of the PhD projects. In addition, supervisors should provide academic guidance, foster independence, and encourage and support doctoral researchers in establishing their own network both in- and outside academia.

As supervisors are required to hold a professorship and are thus senior academics, who may not be available on a day-to-day basis, participants were asked to distinguish between the **primary** and the **daily** supervisor. The **primary** supervisor is the primary examiner of the thesis (i.e. “Doktorvater / -mutter”), while the **daily** supervisor is the person the doctoral researcher regularly discusses the progress of the project and related issues with. These could be the same person and 35 % of participants indicated so. For 31 % their daily supervisor was a senior scientist, for 19 % a post-doc, and for 6 % another professor. Just over 7 % of participants indicated that they did not have or did not know if they had a **daily** supervisor. The observed range for not having any supervisor was from 1 % to 16 % for the individual centers. The majority of **primary** (92 %) and **daily** (85 %) supervisors worked at the same Helmholtz center as the doctoral researcher.

For the analyses below, ‘**daily** supervisor’ refers to the subset of 803 participants, who: 1) had a **daily** supervisor, and 2) for whom their **daily** supervisor was not the same person as their **primary** supervisor. Unless stated otherwise, analyses referring to ‘**primary** supervisor’ included all participants.

There were clear differences in the frequency of meetings between doctoral researchers and their supervisors (Fig. 2.22). Whereas 43 % met their **primary** supervisor less than once a month, participants indicated they meet their **daily** supervisor more frequently; only 5 % met their **daily** supervisor less than once a month and 70 % met their **daily** supervisor (more than) once a week. The frequency of meetings with either the **primary** or the **daily** supervisor decreased with project duration, i.e. the longer the project duration, the less frequent the meetings were.

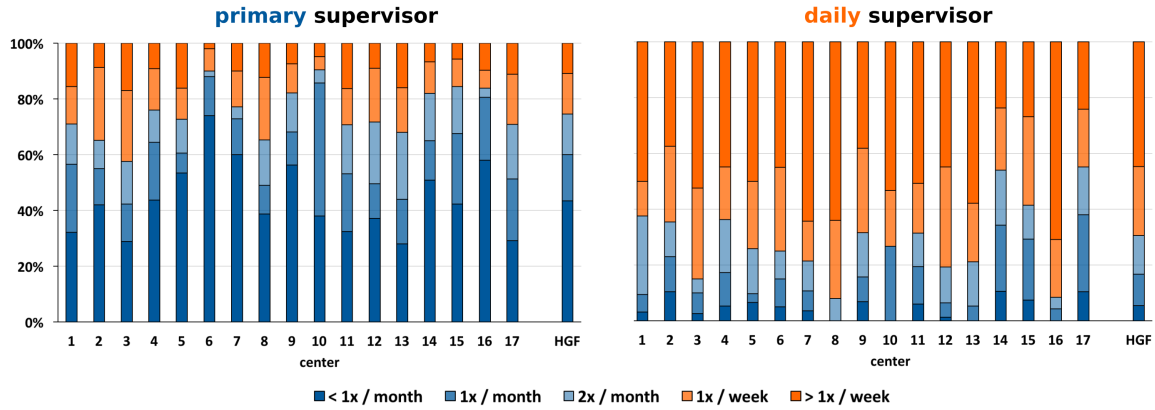


Figure 2.22.: Frequencies of supervisor meetings; **primary** (left) and **daily** supervisor (right).

The Helmholtz Association’s PhD guidelines see the supervisors as scientists sharing responsibility for the professional development of doctoral researchers. To this end, they are required to have the necessary resources (skills and time) to provide advice and foster the doctoral researchers’ independence. When asked to indicate their agreement with several statements aiming to assess these competencies, participants’ answers showed distinct differences between **primary** and **daily** supervisors (Fig. 2.23).

85 % (range 66 % to 96 %) of respondents indicated that they completely agreed or agreed with the statement ‘my **daily** supervisor knows much about my area of research’ (Fig. 2.23 a). A drop to 69 % (range 49 % to 80 %), was observed when the same question was asked for **primary** supervisors.

Similarly, 85 % (range 72 % to 92 %) of participants indicated their (complete) agreement with the statement ‘my **daily** supervisor has enough time to discuss my project with me’ (Fig. 2.23 b). 46 % (range 29 % to 61 %) did so for the same statement concerning their **primary** supervisor. (Complete) agreement with the statement ‘my supervisor can always help me’ was indicated for twothirds (range 52 % to 83 %) of **daily** supervisors vs. two fifths (range 29 % to 58 %) for **primary** supervisors (Fig. 2.23 c). This ranged from 52 % to 83 % for **daily** and 29 % to 58 % for **primary** supervisors.

However, with regard to their **primary** supervisor almost one third of participants (completely) disagreed with the statements on having enough time to discuss the project and the supervisor’s ability to help.

Agreement with the statement ‘my supervisor has stringent requirements for my work’ was characterized by a substantial proportion of participants answering ‘neutral’ (Fig. 2.23 d). 41 % of participants agreed (completely) with this statement regarding their **daily** supervisor, 32 % did so regarding their **primary** supervisor.

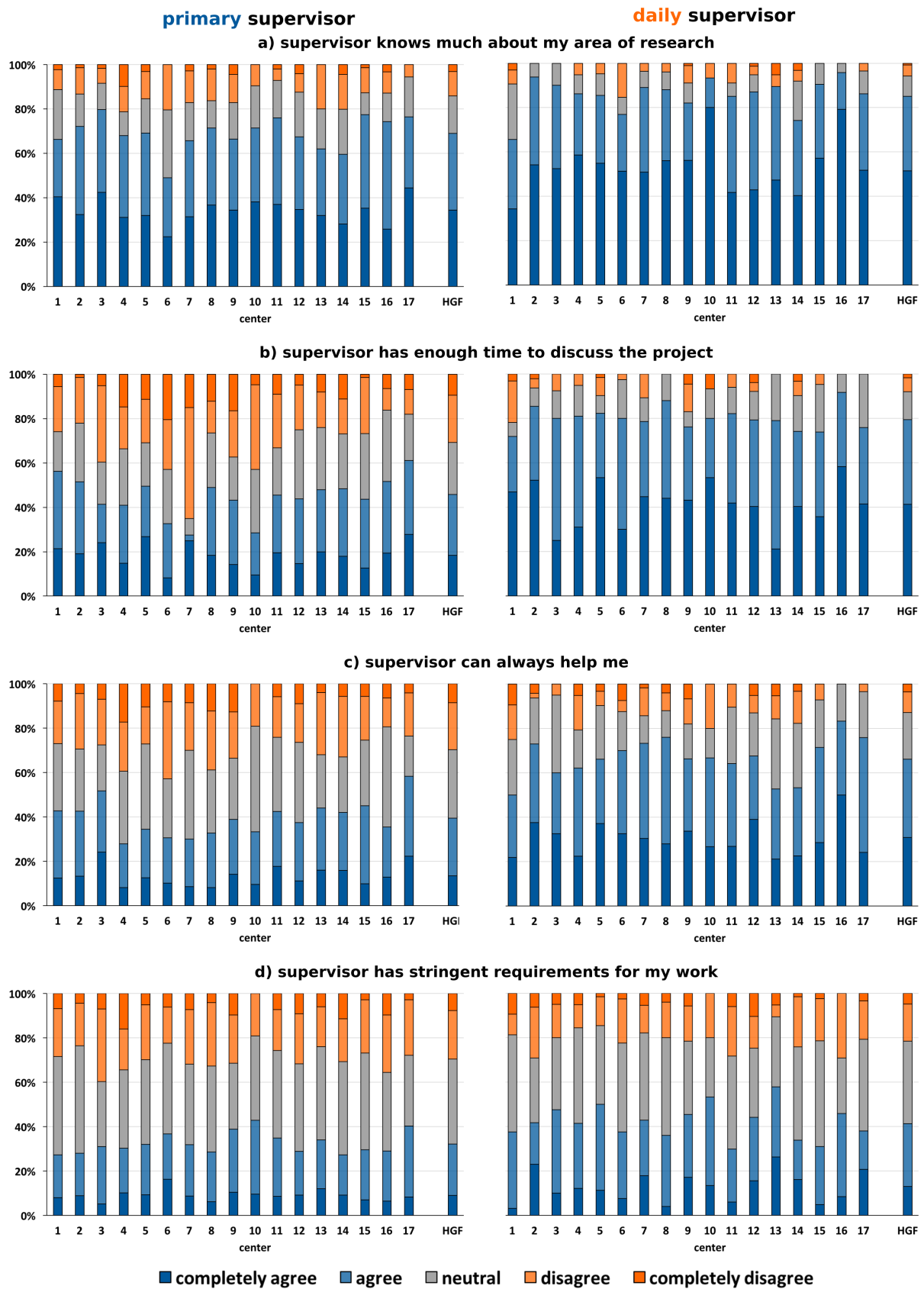


Figure 2.23.: Assessment of supervisor competencies from a doctoral researcher's point of view, classified according to **primary** (left) and **daily** (right) supervisor, respectively.

2.5.3. Satisfaction with supervision

Apart from evaluating the use of specific aspects suggested by the Helmholtz Association's PhD guidelines, the survey also asked doctoral researchers' for their subjective satisfaction with their supervision. The level of satisfaction with supervision was in general very high: two thirds of doctoral researchers were completely satisfied (25 %) or satisfied (38 %) with their supervision (Fig. 2.24).

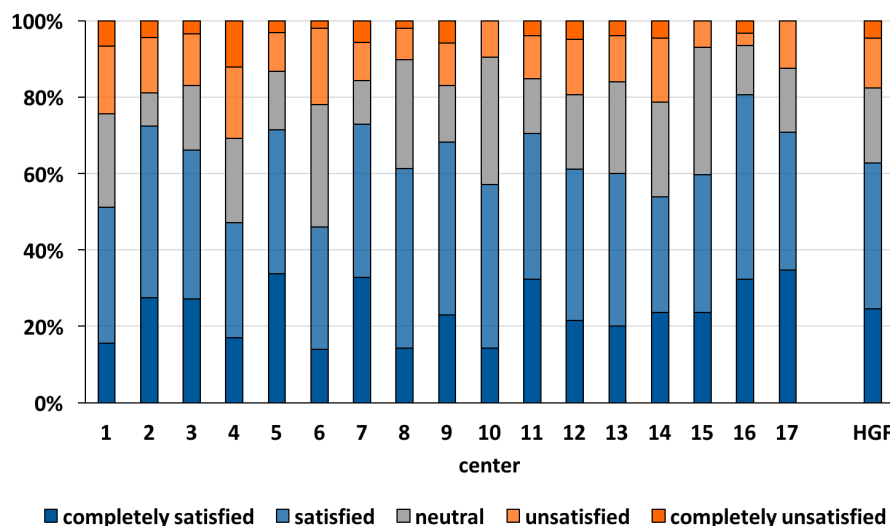


Figure 2.24.: Satisfaction with supervision.

In contrast, 18 % were completely unsatisfied (5 %) or unsatisfied (13 %) with their supervision. The level of satisfaction varied strongly across centers. At centers 4 and 6, only 46 % and at center 16 up to 86 % were (completely) satisfied, and between 6 % (at center 16) and 31 % (at center 4) were (completely) unsatisfied with their supervision.

These numbers changed only slightly when asked for satisfaction with the respective supervisors. While 17 % (range: 14 % and 32 %) of participants were (completely) unsatisfied with their **primary** supervisor, 13 % (range: 0 % and 22 %) indicated the same for their **daily** supervisor. The majority of participants (57 %) was (completely; 23 %) satisfied (34 %) with their **primary** supervisor, ranging from from 44 % to 74 % for (complete) satisfaction between centers. More than two thirds of doctoral researchers were (completely; 37 %) satisfied (35 %) with their **daily** supervisor (range: 53 % to 92 %).

There were no differences with regard to the participants' gender. Both female and male doctoral researchers indicated a higher satisfaction with their **daily** supervisor higher than the satisfaction with their **primary** supervisor. This image does not change when analyzed with respect to nationalities.

The frequency of meetings emerged as an important factor for the doctoral researchers' satisfaction with their supervisors; those with more frequent meetings were more satisfied with their supervisors (Fig. 2.25).

Over half (55 %; range: 17 % to 84 %) of the doctoral researchers indicated that their Helmholtz center could provide help in case of supervision conflicts (Fig 2.26); only 5 % (up to 14 %) indicated that these structures did not exist. Differences between centers were large; while over 80 % of participants in centers 15 and 16 confirmed the availability of help, only 17 % at center 1 did

so. However, almost 40 % (16 % to 71 %) of participants did not know whether help would be available in case of supervision conflicts.

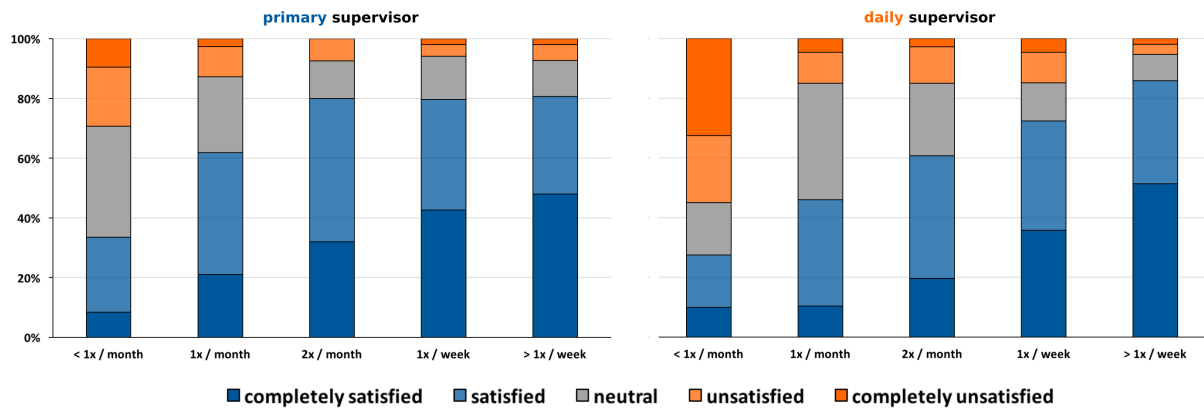


Figure 2.25.: Satisfaction with supervision as frequency of meetings with supervisor, classified by supervisor.

Among those who confirmed the availability of assistance, 29 % (range: 12 % to 44 %) stated this would help solving the conflict, but 9 % (up to 21 %) stated it would not be helpful. However, the majority of participants (62 %) indicated to not know whether provided assistance would be helpful (50 % to 87 %).

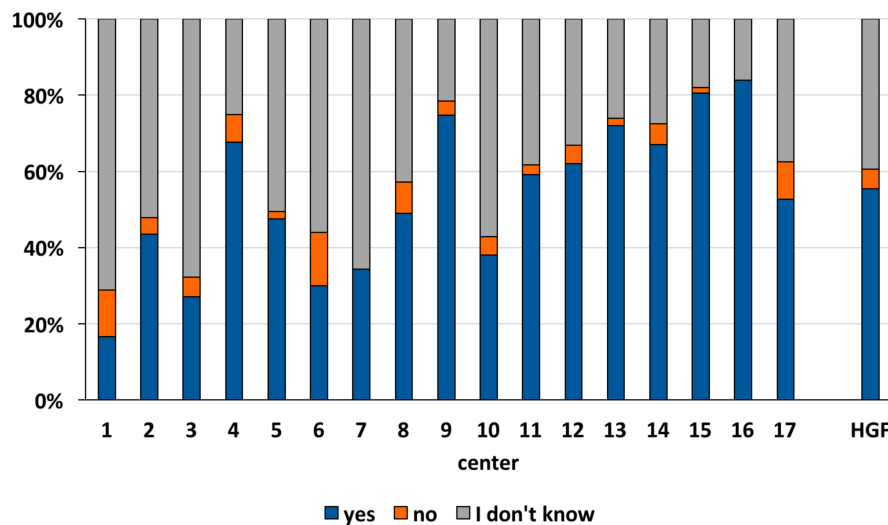


Figure 2.26.: Availability of help in case of supervision conflicts.

2.5.4. Suggestions to improve supervision

A total of 428 participants (31 %) took the opportunity of a free text answer to suggest ideas for improving supervision. Most suggestions concerned the following aspects: (I) more regular meetings / more time with supervisors, (II) more (opportunities for) scientific discussions (e.g. in seminars, on conferences or meetings), (III) colleagues or supervisors could be more experienced / knowledgeable in participants' specific field / subject, and (IV) more feedback and encouragement from supervisors. In addition, a number of participants stated to have problems with their supervisors' personalities and could not see any way of improving their situation.

These answers will be investigated in more detail, also in collaboration with the representatives of the corresponding centers.

2.6. Funding: contracts, stipends and related working conditions

2.6.1. Type of funding

Funding for doctoral researchers within Helmholtz Association can be divided into two broad categories; an employment contract or a stipend. Another classification is by funding source, as contracts and stipends may either be funded by the Helmholtz centers or third parties such as national and international foundations or organizations (e.g. external stipends).

Almost 75 % of participants had a contract, whereas 20 % were funded through a stipend (Fig. 2.27). There were however large differences in the funding type between centers, ranging from the absence of stipends at center 10, and PhD-subsidy contracts (Doktoranden(förder)verträge) as the main funding type at center 5, to 65 % of funding by stipends at center 3.

‘Other’ funding or contract types accounted for less than 5 %, with no major differences between centers. 44 participants (3 %; range 0 % - 23 %) did not know how they were funded.

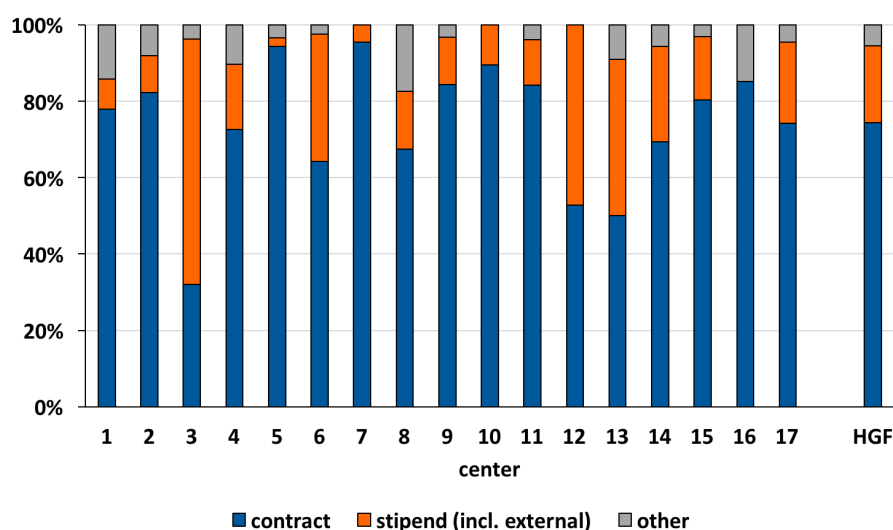


Figure 2.27.: Distribution of funding types by center (excluding the 44 participants who indicated they were not aware of their funding type).

The type of funding differed by nationality; 83 % of German participants, 72 % of non-German participants from the EU, and 49 % of non-EU participants had a contract.

The term ‘contract’ includes a number of different contract types. The majority of participants held a contract according to “Tarifvertrag für den öffentlichen Dienst des Bundes / der Länder” (TVöD/L) funded either by the centers’ budget (47 %; range 28 % to 65 %) or by third parties (35 %; range 7 % to 62 %). 5 % (up to 26 %) had a non-TVöD/L working contract and 13 % (up to 49 %) of participants had a PhD-subsidy contract (Fig. 2.28). Of those who had a stipend, more than two thirds of the German and of the European participants had an internal stipend (i.e. funded by their Helmholtz center), whereas the majority of non-EU stipend holders had an external stipend.

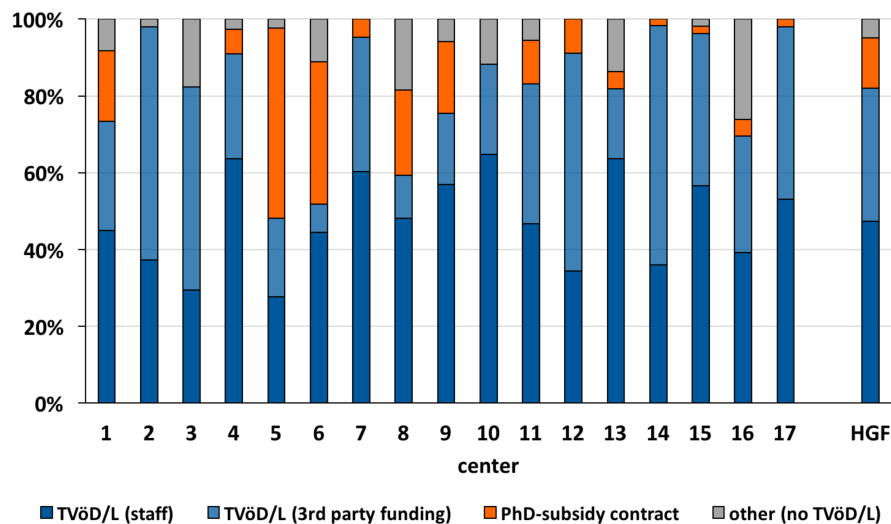


Figure 2.28.: Distribution of different contract types by center.

2.6.2. Income and extra payments

This section discusses the participants monthly net income, i.e. the amount of money monthly transferred to the doctoral researcher's bank account. In case of working contracts, fees for social insurances are already deducted; in case of stipends, the stipend holder has to use this net income to cover additional costs, e.g. the health insurance. In addition to the monthly net income, the survey revealed common supplementary payments, such as staff- or Christmas-bonuses.

The majority (80 %) of doctoral researchers had a monthly net income between €1,101 and €1,900, with 43 % earning between €1,501 and €1,900. Differences between centers were substantial (Fig. 2.29), but appear to be mainly related to the field of research: participants working in the field 'medicine, health and sports science' were overrepresented in the low-income categories (Fig. 2.30). Respondents from the fields 'engineering' and 'mathematics' were more likely to earn more than €1,701.

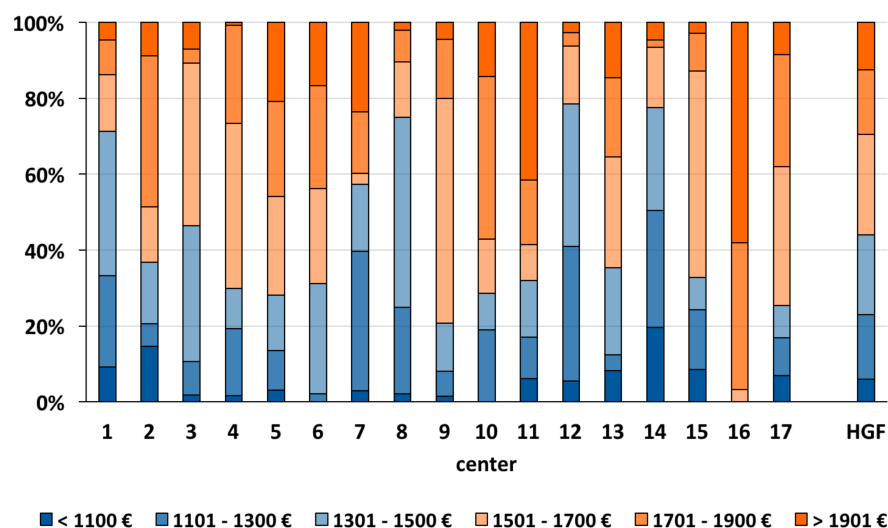


Figure 2.29.: Monthly net income among all participants.

Income also differed between funding types (Fig. 2.31); 67 % of stipend holders had an income of less than €1501, compared to only 36 % for those with a contract. 19 % of participants with a stipend and 29 % of participants with a contract earned between €1,501 and €1,700; 9 % and 35 % earned more than €1,700.

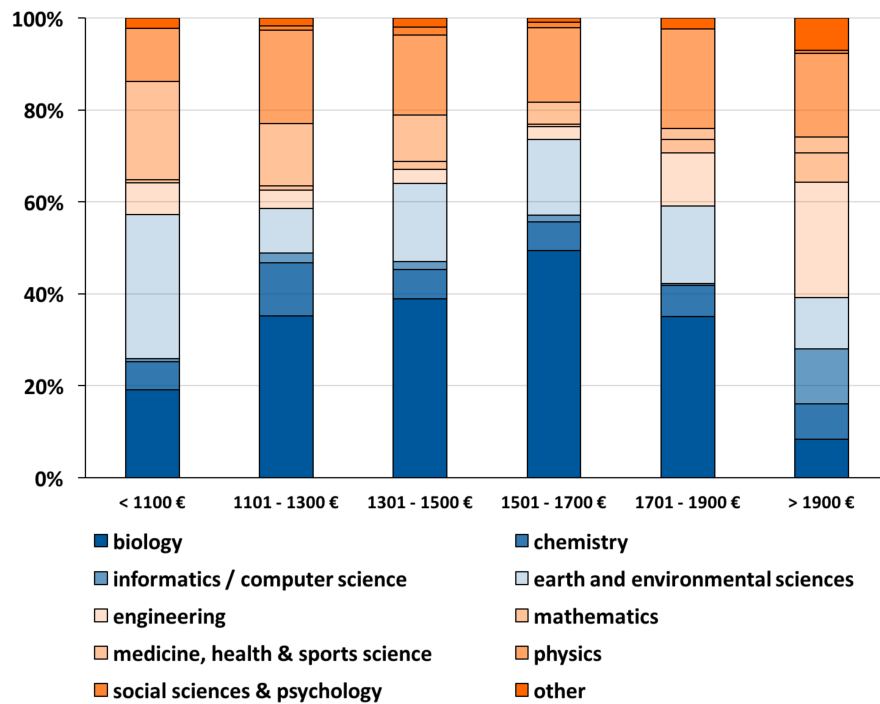


Figure 2.30.: Income of participants by field of research.

There are further substantial differences with regard to income depending on the type of stipend. 20 % of those participants with an Helmholtz-internal stipend indicated earning less than €1,300, opposed to 57 % of respondents with an external stipend. 40 % of internally and 23 % of externally funded stipend holders earned more than €1,501.

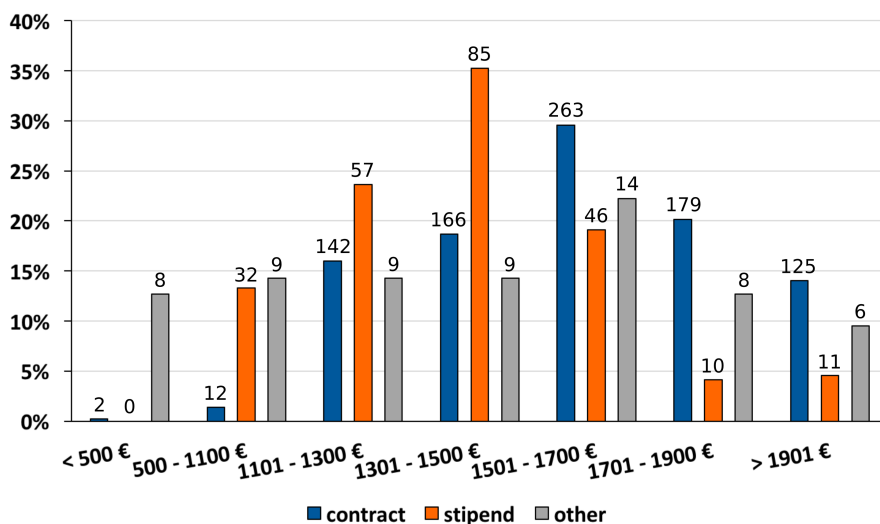


Figure 2.31.: Variations in income by type of funding. Number on top of bars gives absolute frequencies.

At six centers (3, 6, 8, 12, 13, 14), at least one third of the respondents did not have a working contract (see Fig. 2.27). Except for center 8, most of the participants without a working contract were stipend holders. While at center 2 the majority of stipend holders got less than €1,301, the majority of stipend holders at centers 1, 6, 7, 9, 10, 11, 12, 13, 14, 15 and 17 got less than €1,501 (Fig. 2.32). This means when costs for social insurance were considered, the income of these participants was less than those of their colleagues having a contract equivalent to 50 % of a full-time position.

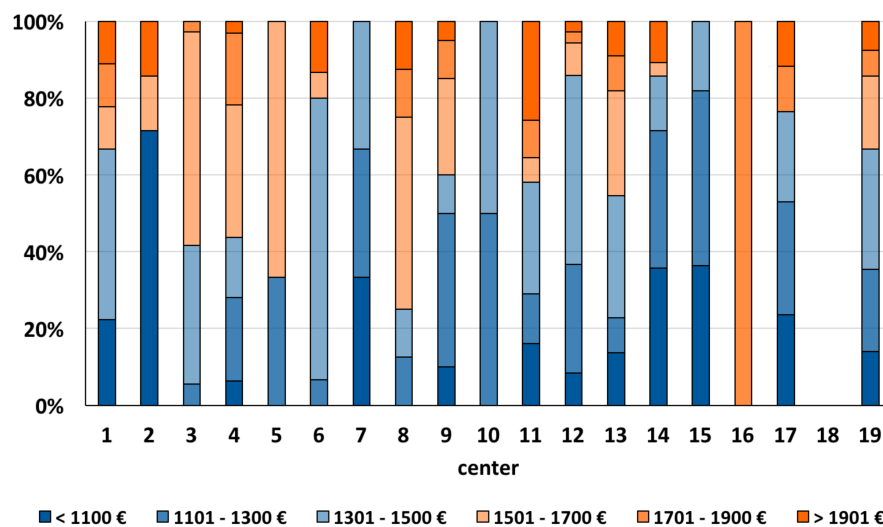


Figure 2.32.: Income stipend holders. For the ratio of stipend holders with regard to the overall amount of doctoral researchers at an individual center, see section 2.6.1 and figure 2.27.

Gender had only a very minor impact on the monthly net income. Apart from different types of funding, the main reason for differences in income were related to the field of research.

In addition to their monthly net income, participants were asked if they received extra payments or bonuses: 68 % indicated to receive a Christmas bonus, 7 % to receive a performance bonus, 3 % to receive any other bonus and 1 % to receive a marriage bonus and child support, respectively.

2.6.3. Initial duration of funding and potential extensions

The Helmholtz Association's PhD guidelines state that a doctoral research project should be designed to be completed in three to four years (from start until submission of the thesis), and that the funding period should match the planned duration of the project.

60 % of doctoral researchers indicated that financial support was guaranteed for three to four years at the start of their project (3 - < 3.5 years: 54 %; 3.5 - < 4 years: 6 %). Furthermore 22 % indicated an initial funding period of 2.5 - < 3 years (Fig. 2.33).

There was no center where all participants indicated having had initial funding for at least three years. Figure 2.33 shows the large variability of the initial funding period within the Helmholtz Association, where at some centers up to 12 % of participants had an initial funding period of less than one, and up to 23 % of less than two years. This contrasted with centers, where up to 60 % and 77 % of respondents reported an initial funding period of 2 - < 3 years and 3 - < 4 years, respectively.

While 14 centers provided their doctoral researchers with at least three years of initial funding, three centers tend to provide short funding periods: 28 % of respondents at center 1 had guaranteed funding for less than the first two years and further 36 % had guaranteed funding for the first two to up to three years, so in total, 64 % indicated not having had guaranteed funding for at least three years. Numbers for center 8 are similar: 19 % and 48 % reported guaranteed financial support for the less than two and less than three years, respectively (total: 76 %). At center 11 the amount of participants indicating to have had initially less than three years equaled those having financial support guaranteed for at least three years (48 % vs. 49 %).

The guaranteed funding period was similar between those with contracts and those with stipends; 56 % and 47 %, respectively, had a guaranteed initial funding period of 3 - < 3.5 years. For 21 % of those with a contract and 27 % of those with a stipend, funding was guaranteed for 2.5 - < 3 years. Only a small proportion of participants (4 % of those with a contract and 10 % with a stipend) had funding for 3.5 - < 4 years.

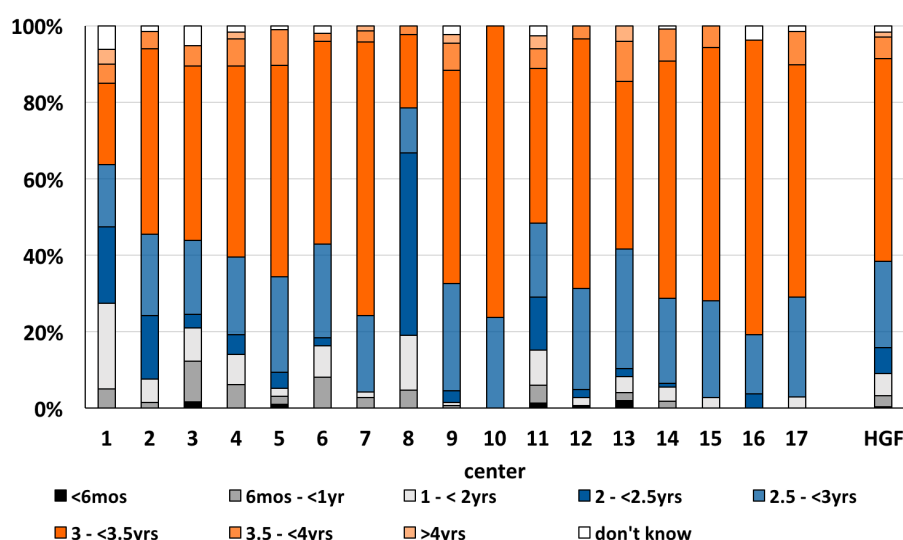


Figure 2.33.: Duration of financial support guaranteed at the start of the project by center.

When asked if it would be possible to extend their funding in case their project duration would exceed the initial funding period, 20 % of participants answered 'yes' and another 46 % 'possibly' (36 %: depends on money; 5 %: depends on successful progress report; 5 %: depends on 'other' factors). 21 % of respondents did not know if an extension would be possible and 13 % did not have the possibility to extend their funding. These numbers differed only slightly by funding type, with stipend holders being less likely to have the option to extend than those with a contract: extension was possible for 21 % of those on a contract vs. 17 % of those with a stipend. 48 % of participants with a contract indicated that an extension would be possible but would depend on other factors vs. 42 % with a stipend indicating so.

2.6.4. Workload and vacation days

Working hours were assessed with reference to a full-time position. Thus, 19.5 - < 22 weekly working hours refer to a 50 % position, 28.5 - < 31 hours to a 75 % position and 38.5 - < 41.5 hours to a 100 % position.

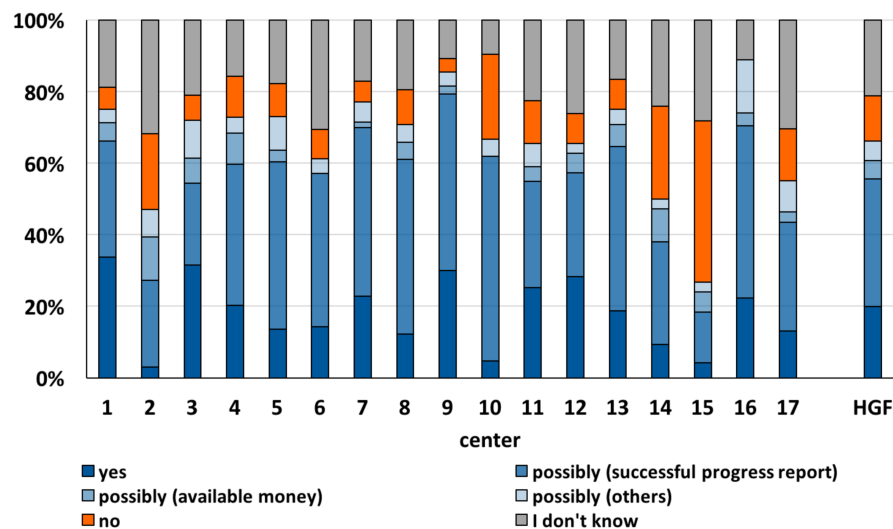


Figure 2.34.: Possibility of contract extensions and potential additional requirements.

For about 30 % of participants working hours were specifying equivalent to 50 % of a full-time position, while roughly another third of participants was contracted to 100 % of a full-time position (Fig. 2.35). Almost 13 % of doctoral researchers had a 75 % position. 21 % of the participants had a contract specifying working hours between 22 and < 28.5 hours (i.e. two thirds of a full-time position).

Centers showed a substantial variation in contracted working hours. The amount of doctoral researchers having (I) a 50 % contract ranged from 0 % to 65 %, (II) 65 % of a full-time position (as defined above) ranged from 0 % - 83 %, (III) a 75 % position ranged from 0 - 69 % and (IV) a full-time position ranged from 0 % - 83 %.

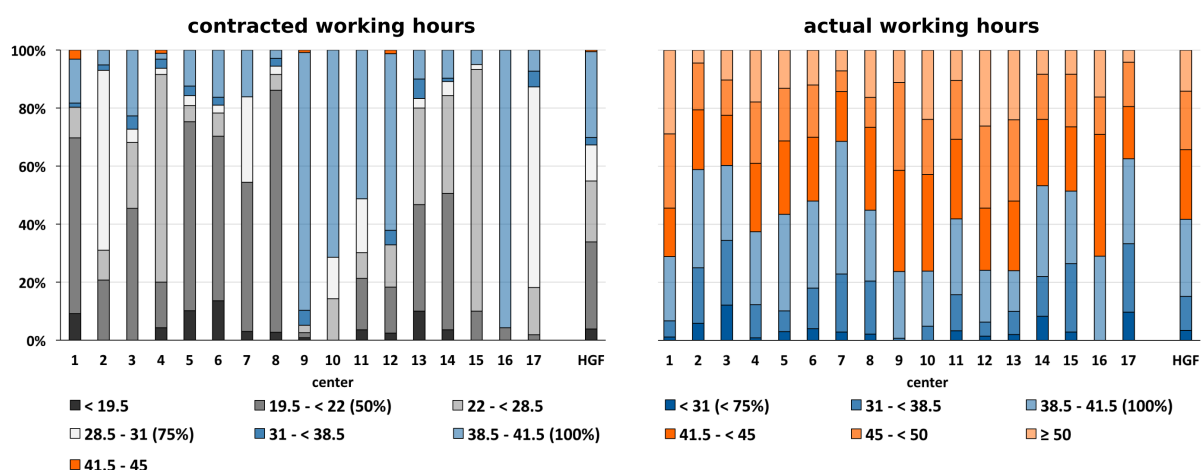


Figure 2.35.: Contracted and actual working hours.

Actual working hours differed markedly from those contracted (Fig. 2.35). While 27 % (range: 14 % – 46 %) of participants worked full-time (38.5 - 41.5 hours per week), more than half of the participants worked more than 41.5 hours per week; with 44 % (24 % – 65 %) working between 41.5 – < 50 hours and 14 % (4 % – 29 %) working 50 hours or more per week. It has to be noted that the amount of doctoral researchers working up to 38.5 hours a week accounted for only 15 % for the entire association, and ranged from 0 % to 35 % between centers.

Respondents spent the majority of their time (average 65 %; range: 53 % to 74 %) on their doctoral research project, other research projects (average 7 %; range: 4 % to 12 %), equipment maintenance (average 6 %; range: 3 % to 13 %) and their own education (average 6 %; range: 3 % to 11 %). A small portion of participants indicated spending time on supervision of students, teaching, applying for funding, commercial services, and ‘other’ tasks.

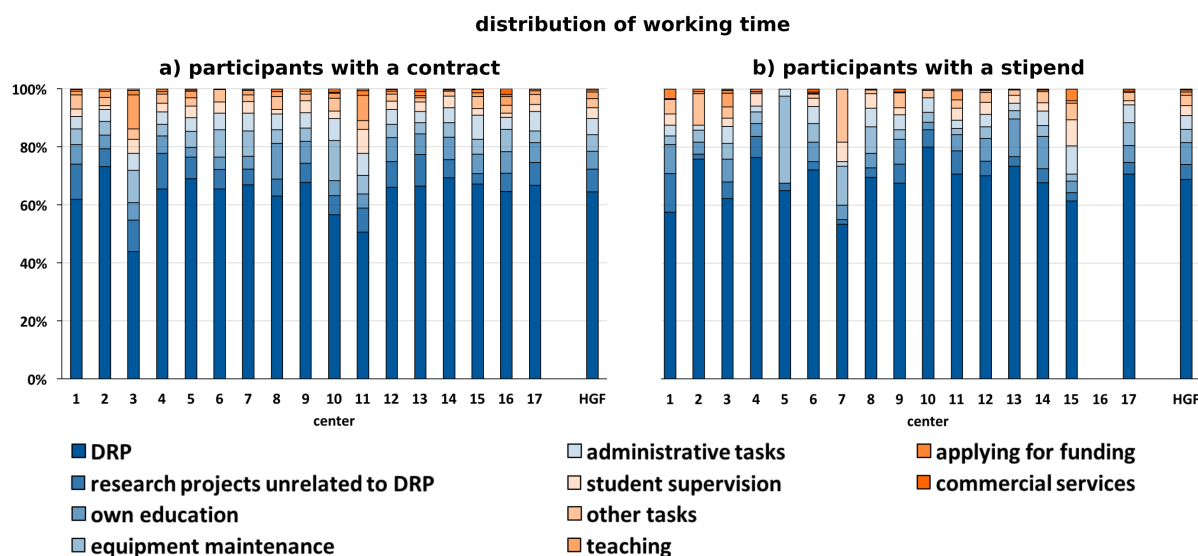


Figure 2.36.: Distribution of working time, split by type of funding: (a) doctoral researchers having a contract and (b) doctoral researchers being funded by a stipend. DRP: doctoral research project.

The distribution of working time by funding type (Fig. 2.36 and appendix Fig. A.1) shows stipend holders spent on average 4 % more time on their doctoral research project than those with a contract (range from 14 % less time for the project to 23 % more time). Apart from that, the general trend was that stipend holders spent less time on ‘other’ research projects, equipment maintenance, administrative tasks, the supervision of students, teaching and applications for funding than their colleagues having had a contract.

Looking at the number of vacation days, two groups dominated: 32 % (range: 0 % to 86 %) of participants had 20 vacation days per year and 40 % (range: 4 % to 88 %) had 30 days per year (Fig. 2.37). 14 % (range: 3 % to 56 %) of participants had a contract or stipend not specifying the number of vacation days and 4 % (range: 0 % to 14 %) did not know their number of vacation days.

2.7. Doctoral researchers with children

The phase of the doctoral project correlates for many with the desire to settle down and to start a family. According to the PhD guidelines provided by Helmholtz Association, parents pursuing a doctoral degree shall receive support by flexible working hours and childcare facilities. Also on extension of their funding period should be advocated by their center, as compensation of their parental leave.

Of those doctoral researchers participating in the survey, 7 % had children (Fig. 2.38 a). There was no question on the age of the participants’ children. However, from the free-text answers it was possible to estimate that many of the children were toddlers. Among all participants, 22 % (range: 8 % to 35 %) would consider having (further) children during the time of their doctoral

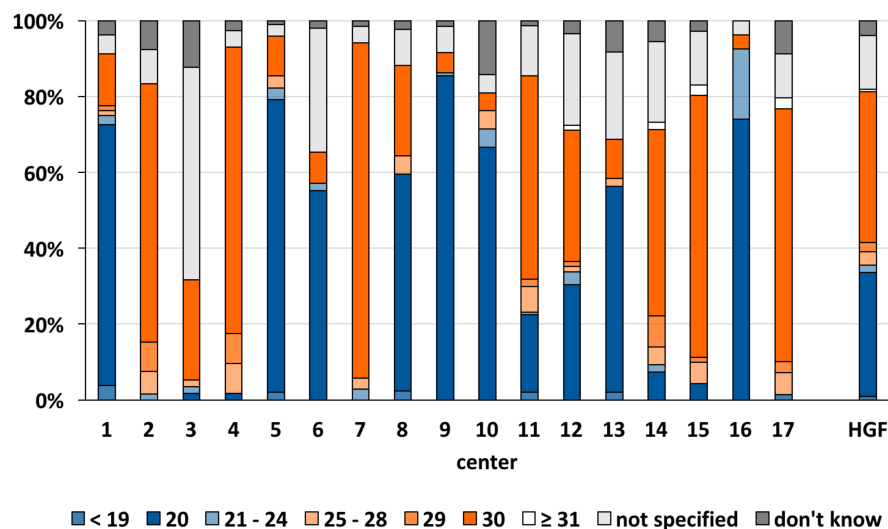


Figure 2.37.: Days of vacation.

research project (Fig. 2.38 b). 34 % (range: 22 % to 48 %) of the participants indicated not to consider having children during their doctoral research project, mainly because of reasons related to the project itself. This section is limited to the 96 participants, who had children.

48 % of participants with children were female and 52 % were male; the majority (61 %) was German. About one third of those with children conducted their doctoral research in the field of biology, one quarter in earth and environmental sciences, and 13 % in physics. These numbers roughly agree with the overall distribution of survey participants across research fields (see sections 2.1 and 2.3.1). As 96 participants having children would result in statistically too low frequencies on center-level, further results are presented as average-values for the entire association.

Almost two thirds of the respondents with children worked at a center which offered childcare facilities; 21 % indicated that their center did not offer any and 17 % said they did not know if their center offered these facilities. Only 12 % of the respondents had a place for their children or could have easily got one, while 8 % were not sure, if this was the case, and 14 % who had not been able to get a place. About one third decided to not use the offered facilities.

Half of the participants with children reported that they could extend their contract by the time of parental leave (Fig. 2.39). This was not possible for 14 %, and 36 % did not know if such an extension would be possible. However, many respondents highlighted in the free-text answers that an extension was only possible for the time spent on parental leave, without the possibility to compensate for the time of pregnancy when participants were not allowed to work in laboratories.

For almost 50 % of those with children it was possible to take the children to work (no: 21 %; I don't know: 31 %) and for 41 % to work from home (not possible: 19 %; not aware if possible: 41 %; Fig. 2.39). Financial support for participation in conferences, etc. for respondents with children was indicated by 10 % of the participants (not possible: 35 %; not aware if possible: 56 %) and further child support was indicated by 13 % (not possible: 41 %; not aware if possible: 46 %; Fig. 2.39).

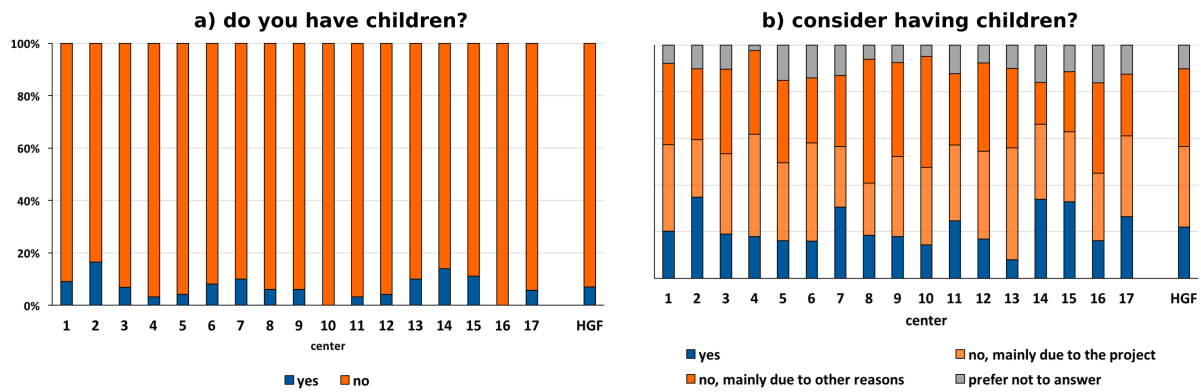


Figure 2.38.: (a) Doctoral researchers with children and (b) those planning to have (further) children.

Almost half of the participants with children indicated they were working on their project since at least three years. More than one third expected their project to take more than four years.

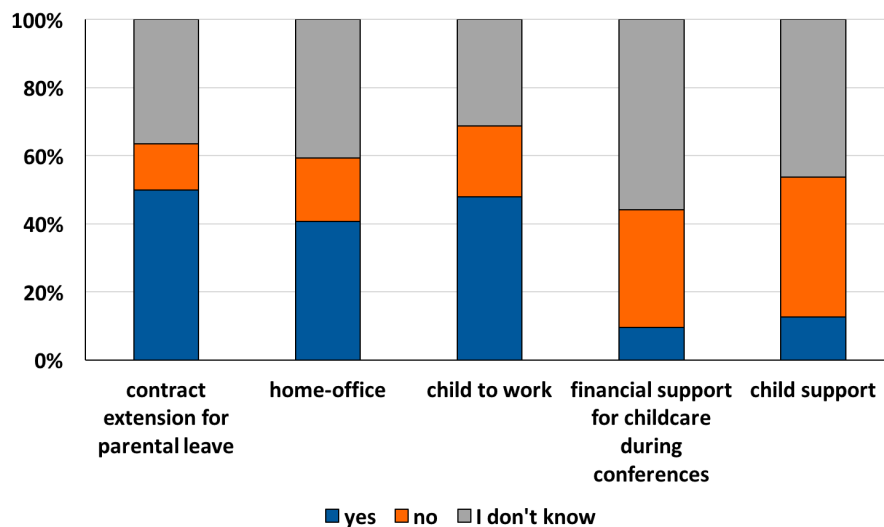


Figure 2.39.: Support for doctoral researchers with children.

Two thirds of the participants with children stated they were actually working more than 38.5 hours per week. This is less compared to the 85 % of all participants who reported to work more than 38.5 hours per week.

More than three quarters of those with children were employed on a contract based on the conditions of TVöD/L. However, the monthly net income differed markedly irrespective of funding type: 55 % of the participants with children indicated they received less than €1.500 per month. This included 16 % of participants with less than €1.100 compared to the overall percentages of 44 % for monthly incomes of less than €1.500 and 23 % for €1.100 per month, respectively.

The majority (66 %) of all respondents with children were (completely) satisfied with the decision to pursue a doctoral degree.

At the end of the section for participants with children, a free-text box was provided for any additional comments and suggestions. Answers from 23 participants indicated that there were large differences in satisfaction with their general working conditions. Some participants mentioned good support, while others had to actively ask for help, experienced lack of childcare

facilities, indicated their vacation days did not cover the closing days of their childcare facilities, or had to fight to be allowed to work from home. The lack of parental leave or “Elterngeld” emerged as a major problem for stipend holders.

2.8. International doctoral researchers

This section focuses on the 497 non-German participants (36 %). Of these international doctoral researchers, 45 % (range: 0 % to 69 %) were from EU countries and 55 % (range: 31 % to 100 %) were from countries outside the EU (Fig. 2.40). Although proportions for the different centers are displayed in the graphs, the results for center 10 should be interpreted with caution due to the low number (5) of international participants.

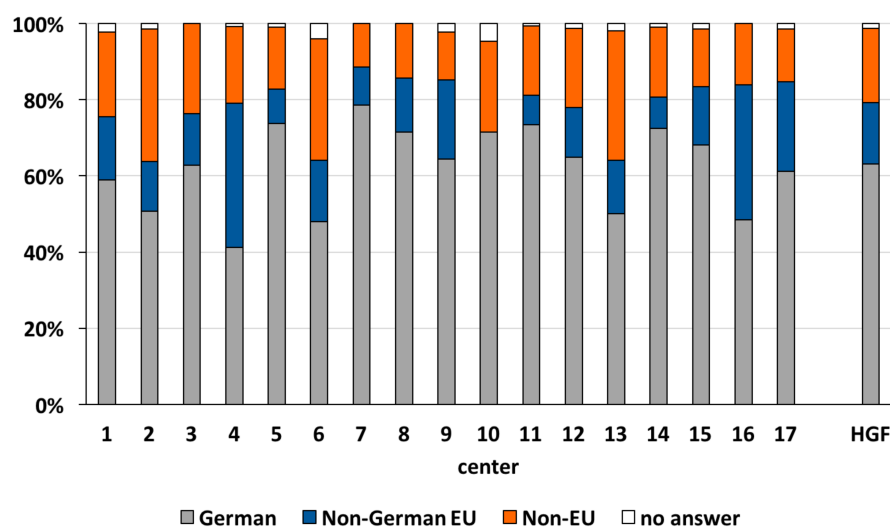


Figure 2.40.: Distribution of nationality by center.

Three quarters (range: 34 % to 100 %) of international participants reported their center had a contact person for international researchers, 9 % (range: 0 % to 37 %) did not, and 15 % (range: 0 % to 30 %) did not know if there was one (Fig. 2.41).

89 % (range: 69 % to 100 %) of international participants communicated with their colleagues in English (Fig. 2.42 a). German was the primary language for 10 % of international participants, but noticeable differences are seen between centers; participants from centers 11 and 15 were most likely to communicate with colleagues in German.

When it comes to obstacles, such as language barriers, international participants experienced them (almost) never (57 %) or only sometimes (30 %; Fig. 2.42 b). However, at some centers they faced these obstacles relatively often (21 %) or very often (13 %).

The majority (56 %; range: 33 % to 80 %) of the international participants could access all important information in a language they understood; 44 % could not (Fig. 2.42 c). 77 % of those who did not receive information in a language they understood (i.e. 34 % of all international participants; range: 18 % to 60 %) received help translating information from their colleagues. A small proportion (10 %; range: 0 % to 23 %) of international participants indicated that information was not available to them and received no help from colleagues.

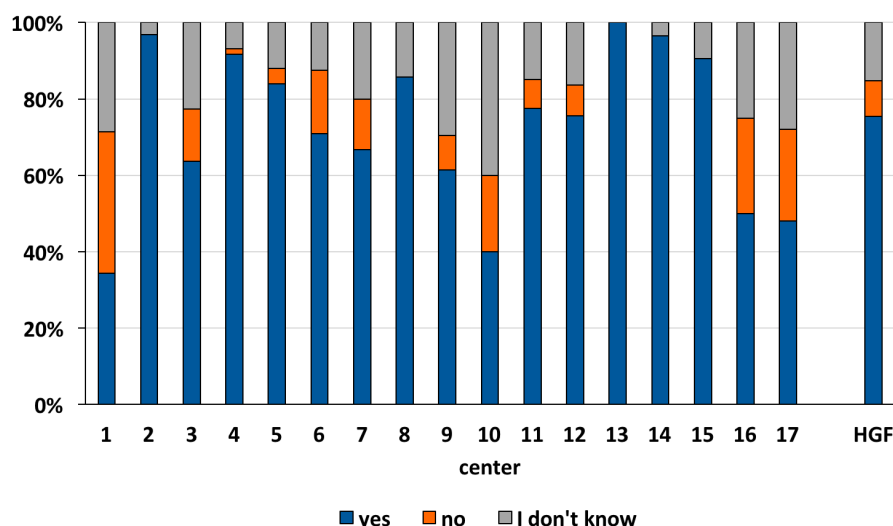


Figure 2.41.: Contact person for international doctoral researchers.

Additional comments and free text answers mostly drew attention to integration problems of international doctoral researchers into mostly German-speaking working groups due to language and cultural barriers and also lack of use of English in administration and support at the centers.

The results show some variability in the structural support centers provided to international doctoral researchers. Most centers supported internationals in learning German in some form; three quarters of the participants (range: 19 % to 96 %) had German courses offered by their center (Fig. 2.43 a). Monetary support for external courses was less common and was available to 16 % of international participants (range: 5 % to 44 %) (Fig. 2.43 b). On average 43 % (range: 26 % to 67 %) of participants indicated their center allowed them to attend language courses during working hours, and a substantial proportion (40 %; range: 28 % to 62 %) of international participants stated they did not know if they could (Fig. 2.43 c).

Although 78 % of international doctoral researchers had access to German language courses at their center, 63 % did not attend any German language class (Fig. 2.44 a). 16 % of those who did take German classes did so at their center. International participants from within and outside the EU were equally likely to take German classes (34 % vs. 39 %).

The main reason for not attending any German classes was lack of time (49 %), especially among the non-EU participants (58 % compared to 39 % of EU participants; Fig. 2.44 b). However, comparing working hours of international doctoral researchers who took classes to those who did not, did not show any differences. Comparing the workload of the respondents having indicated that they had no time to take German classes to the overall workload does not give any major differences except for the group having indicated to work more than 50 hours per week (22 % vs. an average of 14 %).

The majority of international doctoral researchers (77 %; range: 59 % to 100 %) felt integrated into their working group, with slightly more EU than non-EU participants saying so (83 % vs. 73 %; Fig. 2.45 a). On average 18 % of participants indicated not feeling integrated into their working group; due to language issues (7 %) and due to other reasons (11 %).

These numbers were slightly lower for integration at the center, though the majority of participants also felt integrated into their center (Fig. 2.45 b).

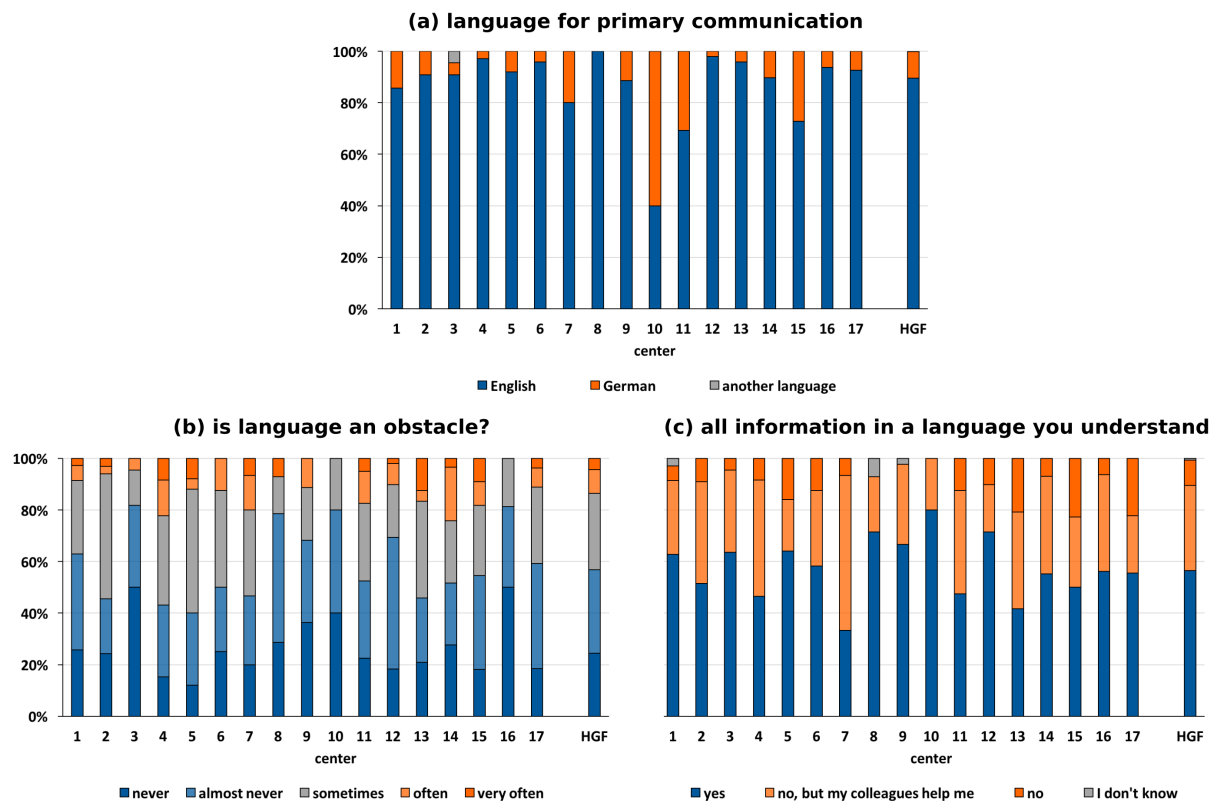


Figure 2.42.: Primary language for communication (a) and language obstacles (b–c).

2.9. Graduate Schools

The Helmholtz Association has encouraged the set up of 34 research and graduate schools at its research centers to embed doctoral research into educational programs and to provide supervision and interdisciplinary training for young researchers. In addition to these graduate schools, doctoral researchers may have access to further graduate schools, for example at their university.

86 % (range: 48 % to 100 %) of the participants had access to a graduate school at their center and / or elsewhere (Fig. 2.46 a). Only 2 % (up to 7 %) of participants had no access and 12 % (up to 52 %) did not know, if there was one.

72 % (range: 10 % to 100 %) of the doctoral researchers had access to a graduate school at their center (Fig. 2.46 b); 52 % (range: 19 % to 74 %) (also) had access to one outside their center (Fig. 2.46 c). However, 14 % and 33 % of respondents did not know, if their center had a graduate school or if they would have access to one outside their center, respectively. As figures 2.46 a - c show, a proportion of participants at most centers stated having or not having access to the graduate school at their center; while this could reflect participants were unaware of the existence of their centers' graduate school, it is more likely to reflect the fact that, at some centers, only part of doctoral researchers had access to their centers' graduate school (based on, for example, the affiliated program or department).

70 % were enrolled in a graduate school (range: 8 % to 100 %), contrasting 14 % (range: 0 % to 75 %), who were not enrolled despite having had access to one (Fig. 2.46 d).

The following section provides insights into the program offered by the graduate schools and the degree to which they were used by the participants. Participants were additionally asked which services they would like their graduate school to offer.

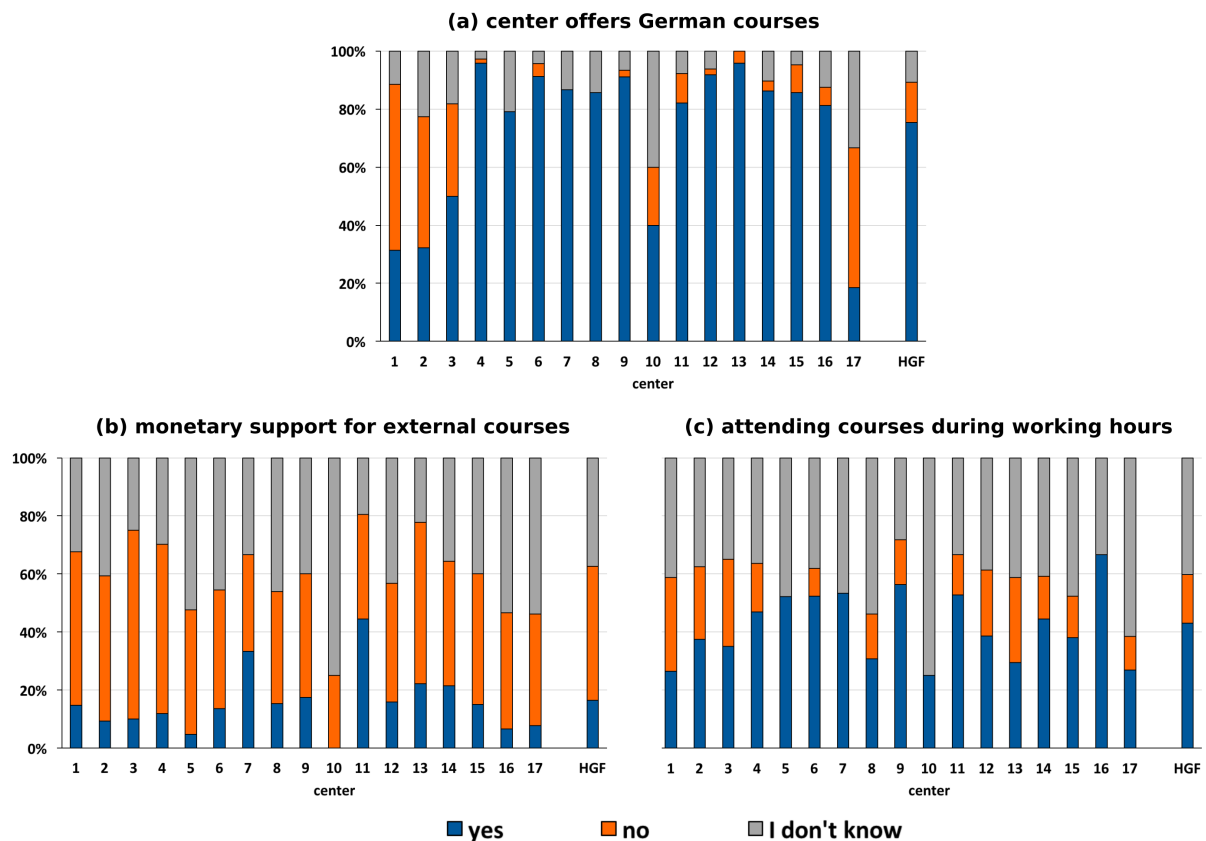


Figure 2.43.: Support from centers to learn German.

Nearly all participants indicated having had access to training programs, soft skill courses, and financial support to attend conferences. 97 % of participants had access to funding for conferences (76 % via their graduate school, 21 % via other sources), 97 % had access to training programs (87 % via their graduate school, 10 % via other sources), and 99 % of participants had access to soft skill courses (90 % via their graduate school and 9 % via other sources) (Figs. 2.47 a–d). In addition, most participants (87 %) had access to summer schools (59 % via their graduate school and 28 % via other sources; Fig. 2.47 g). Funding for equipment, publication or ‘other’ purposes were more likely to be administered via ‘other’ sources (55 %, 54 % and 36 %) rather than graduate schools (14 %, 16 % and 23 %), though a proportion of participants indicated these resources were not available (31 %, 29 % and 41 %).

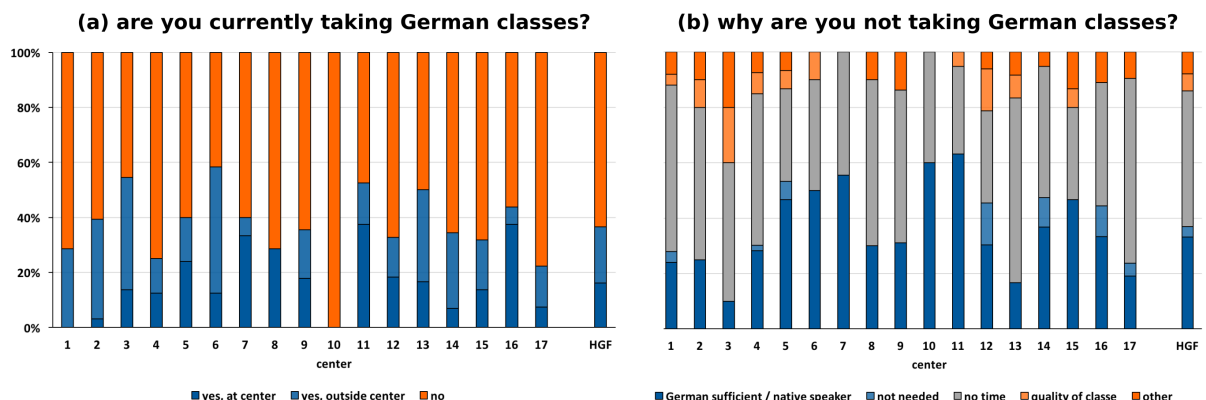


Figure 2.44.: Participation in German classes and reasons for not taking any.

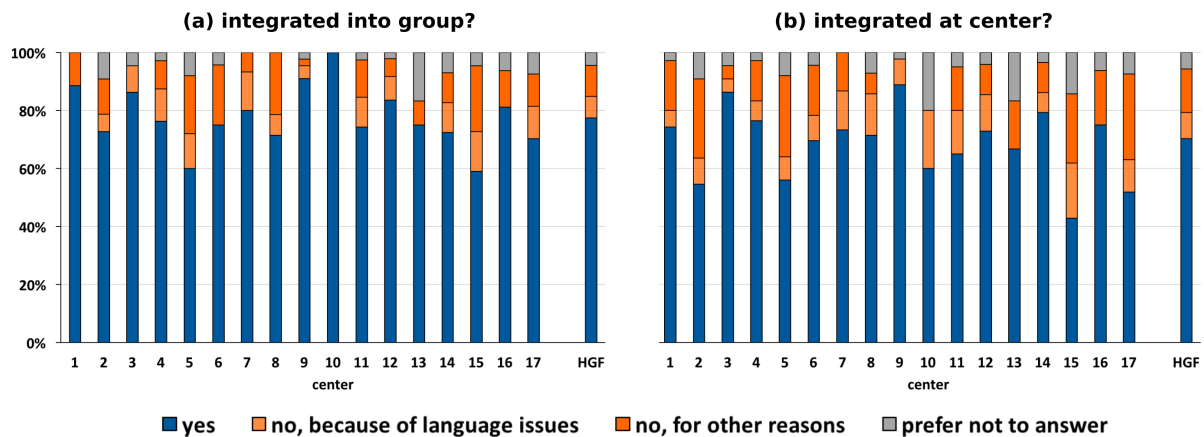


Figure 2.45.: Integration of international doctoral researchers into their group (a) and center (b), respectively.

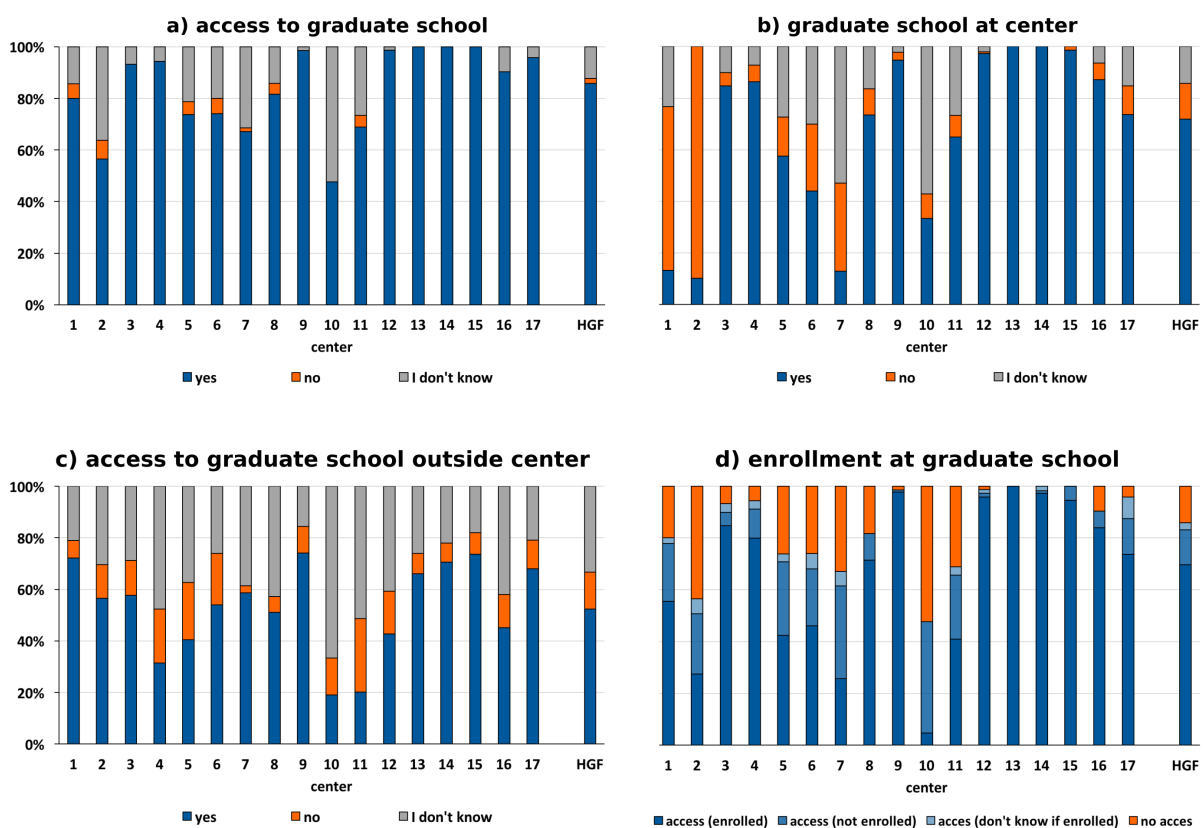


Figure 2.46.: Access to (a–c) and enrollment at (d) graduate schools.

Additionally, graduate schools were the most important provider of social activities such as informal get-togethers (75 %; Fig. 2.47 h) and retreats (73 %; Fig. 2.47 i). The PhD guidelines explicitly state providing advice is a key task of the graduate schools, and the majority of participants indicated their graduate school offered general advice (70 %; Fig. 2.47 j), career fairs (55 %; Fig. 2.47 k) and help for conflict resolution (59 %; Fig. 2.47 l).

In general, more than 80 % of participants indicated that they would use one of the above presented services (Fig. 2.48). Exceptions are the financial support for equipment and conflict resolution. The likelihood to use financial support if offered depends on the field of research: whereas only 43 % of participants from social sciences and 66 % of those from medicine would use it, between 70 % to 76 % of participants from the other fields would do so. Only 70 % of

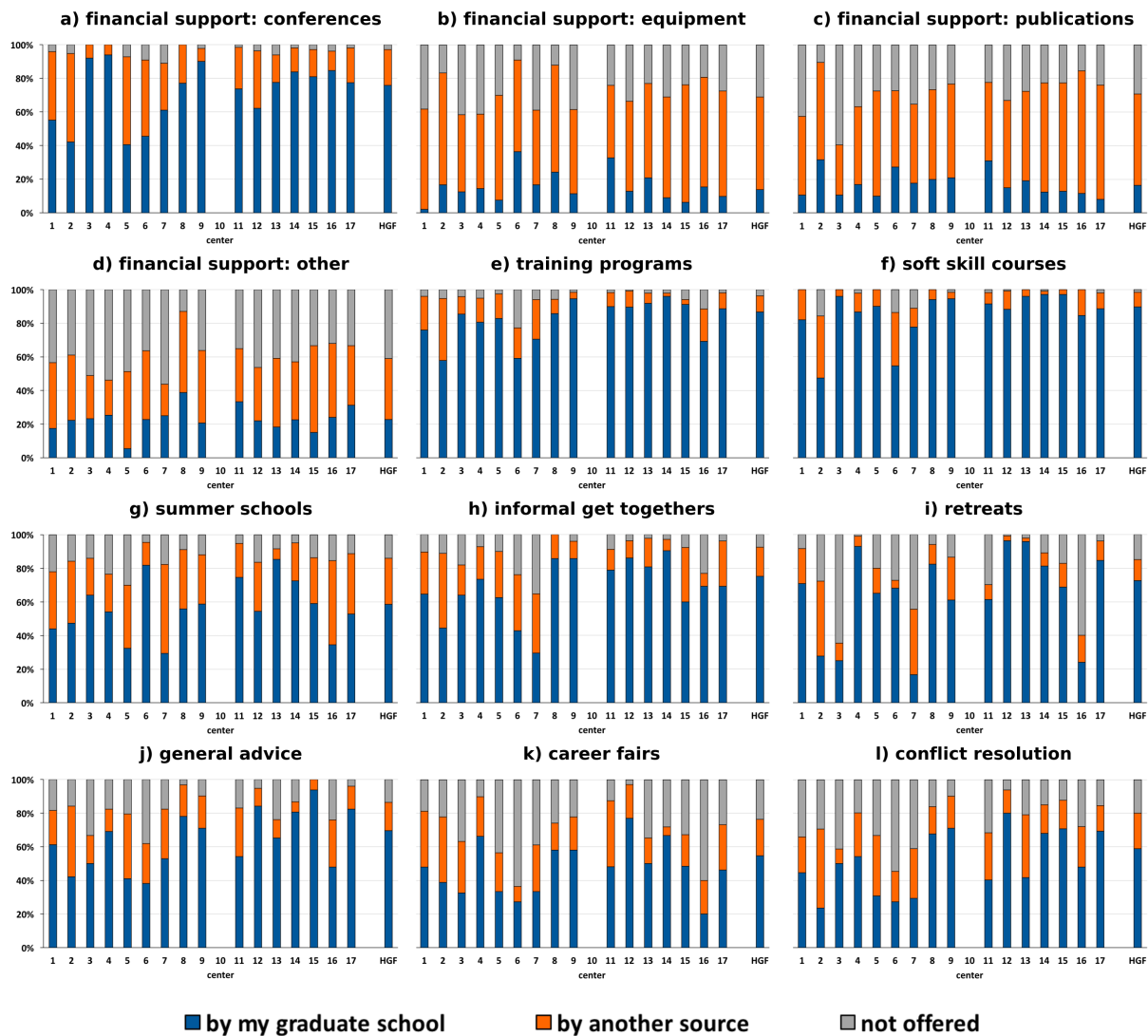


Figure 2.47.: Items offered to doctoral researchers by their graduate school or other sources. Results for center 10 are not displayed due to low frequencies.

the participants would contact the graduate school and ask for advice and support in case of conflicts.

The large majority of participants spent less than seven hours per month on graduate school activities (1–2 hours: 37 %, 3–4 hours: 21 %, 5–6 hours: 13%; Fig. 2.49). Those at centers 6 and 10 spent the least time on graduate school activities, those at centers 11, 12, 14 and 16 the most.

Nearly three quarters of participants (complete) agreed with the statement ‘I benefit from my graduate school’ (Fig. 2.50 a). Agreement was highest at centers 3, 14, 15, and 17, where over 80 % of participants (complete) agreed with the statement. Those at centers 2, 6, and 16 were most likely to be neutral or to disagree with it. Direct benefits for the thesis were seen by 45 % of the respondents, whereas 17 % did not see direct benefits (Fig. 2.50 b). However, the differences between individual centers were large.

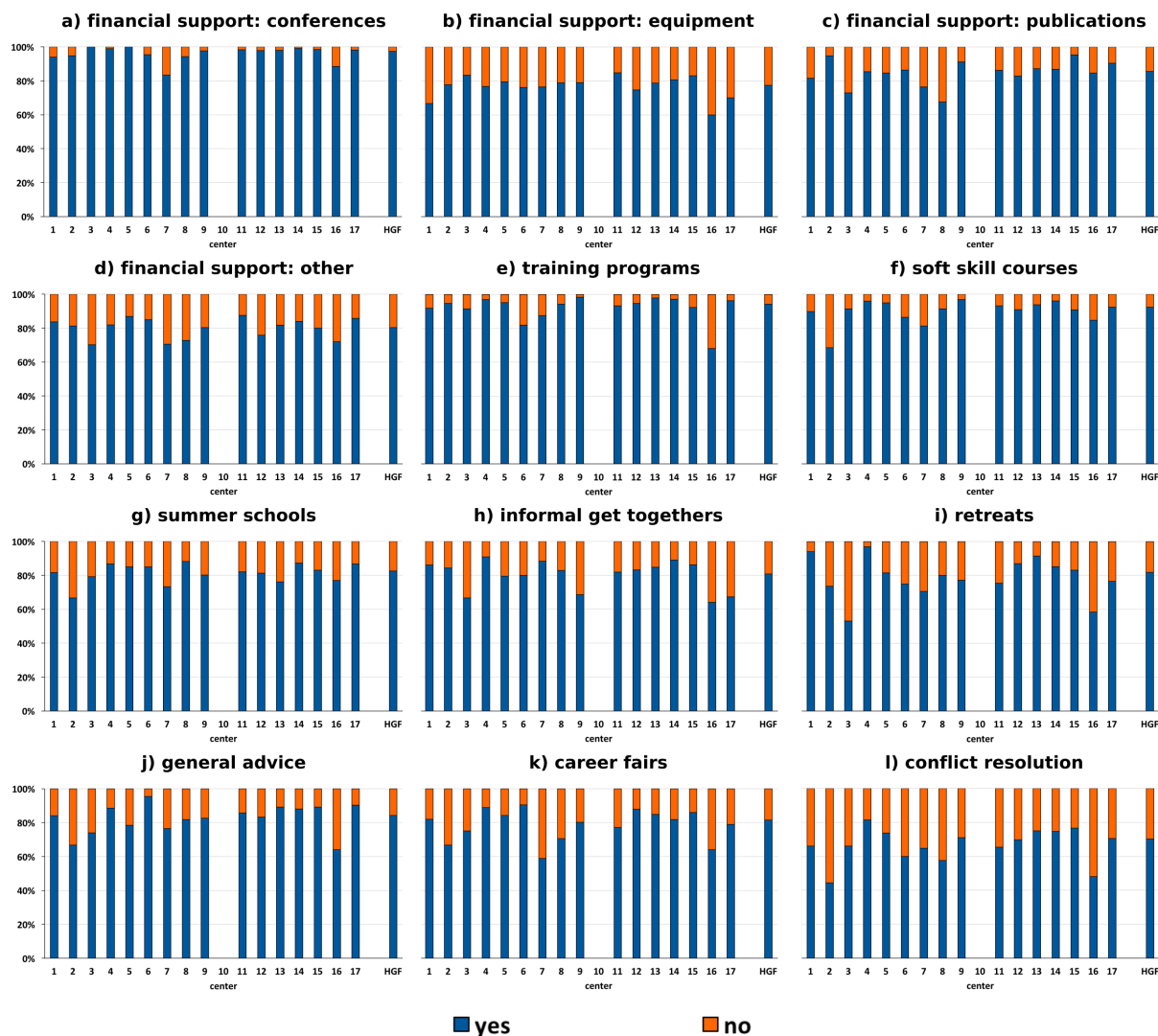


Figure 2.48.: Answers to the question “Would you use the following items, if offered to you?” Results for center 10 are not displayed due to low frequencies.

2.10. Research abroad

The Helmholtz Association’s PhD guidelines encourage mobility periods such as international trips and networking to support the professional development. This section on “research abroad” summarizes field campaigns and measurements, participation in summer and winter schools, stays at partner institutions, and participation in conferences, workshops and courses.

46 % (range: 30 % to 71 %) of respondents were unaware if they would be allowed to leave for a research stay abroad during their doctoral research (Fig. 2.51 a). Only 4 % of respondents indicated that they were not allowed to leave for a research stay abroad. There was moral support, such as providing letters of support and help to acquire funding, for 52 % of participants, ranging from 22 % - 64 % between centers (Fig. 2.51 b). Between 39 % and 77 % (average: 30 %) of the participants indicated that they were allowed to leave for a research stay and had access to funding from the center (Fig. 2.51 c).

41 % of participants (10 % to 75 %) indicated their graduate school provided funding for research stays abroad (Fig. 2.51 d). At centers 9 and 15 more than 70 % of participants indicated their graduate school provides funding for research stays.

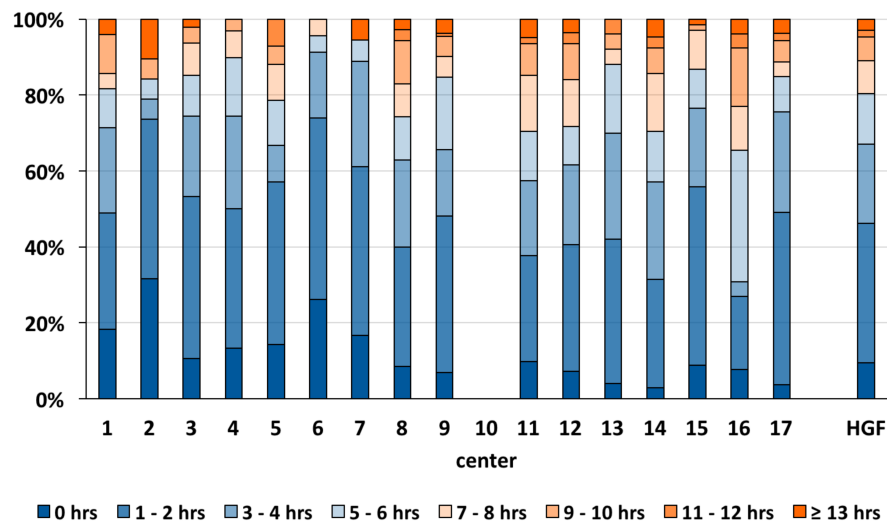


Figure 2.49.: Average time spent per week on graduate school activities. Results for center 10 are not displayed due to low frequencies.

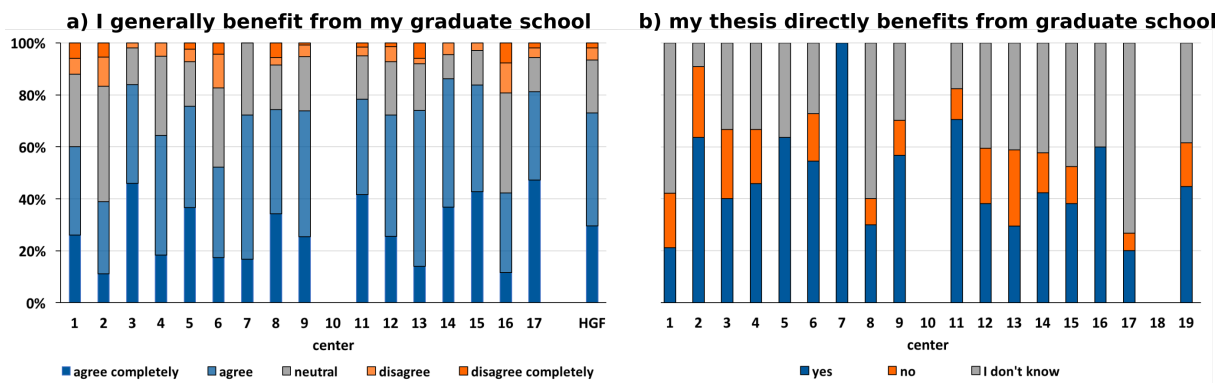


Figure 2.50.: Benefits from graduate schools. Results for center 10 are not displayed due to low frequencies.

80 % of participants had not done a research stay abroad, whereas 20 % (range: 9 % to 40 %) had been abroad for a research stay at least once during their doctoral research (Fig. 2.53 a). Differences between centers can be in part attributed to their different research focuses; e.g., doctoral researchers in the field of earth- and environmental sciences were most likely to spend time on research stays abroad (29 % at least one research stay abroad) than those in fields with more work in the laboratory or patient contact, such as biology (18 % at least one research stay abroad) or medicine, health, and sports science (13 % at least one research stay abroad).

The most common reason for a research stay abroad was to visit a partner institution (67 %; Fig. 2.52 a), followed by conducting field campaigns or measurements (40 %; Fig. 2.52 b), participating in conferences (32 %; Fig. 2.52 c), workshops or courses (30 %; Fig. 2.52 d) and in summer or winter schools (23 %; Fig. 2.52 e).

285 participants had at least one research stay abroad. For 31 % of these, the cumulative time spent abroad (i.e. time spent on all research stays combined) during their doctoral research project was between one and three months. 25 % spent less than two weeks abroad, 17 % spent 2 to 4 weeks abroad, 16 % spent 3 to 6 months abroad, and 9 % were abroad for 6 months or longer (Fig. 2.53 b). The cumulative duration of research stays differed somewhat between research fields. The majority of those in the field of earth and environmental sciences, who were

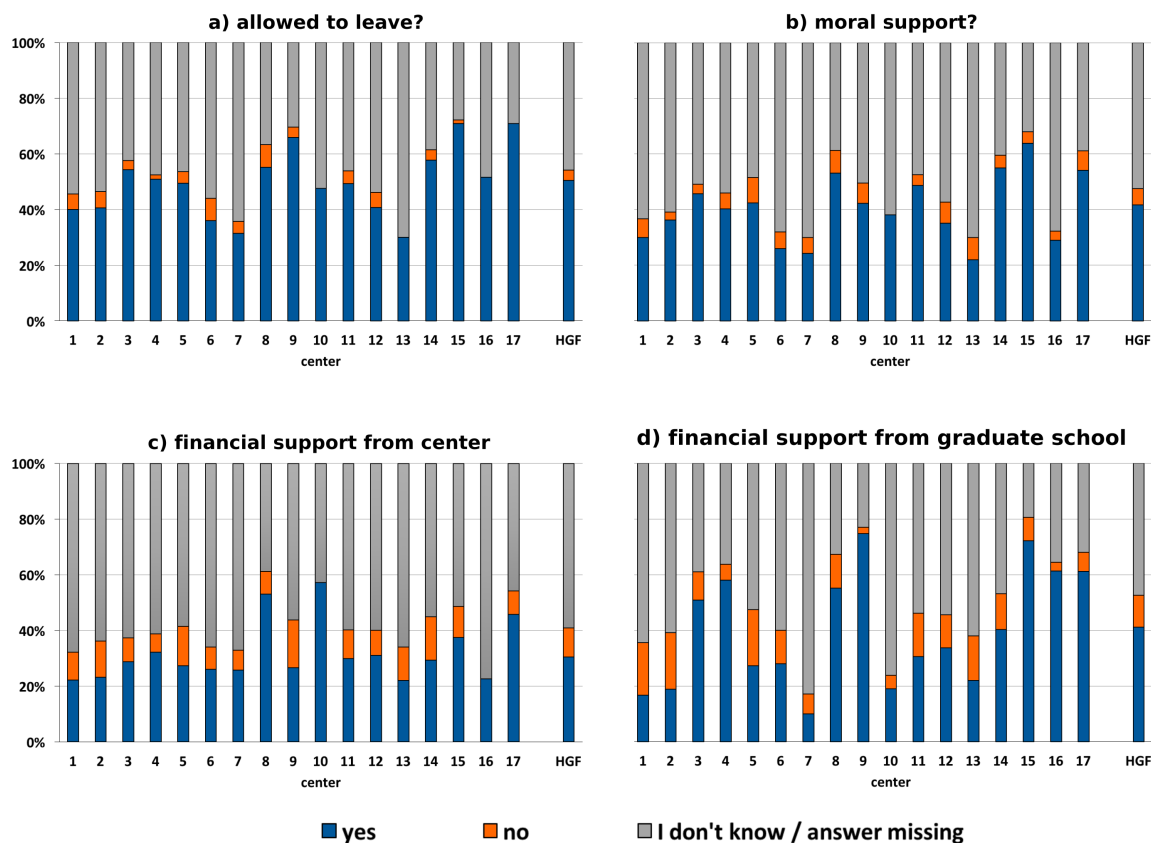


Figure 2.51.: Permission and support to leave for research stays abroad.

most likely to have been abroad, were abroad for less than three months (67%). This was the case for 77 % of those in the field of biology, 90 % of those in the field of chemistry, and 72 % of those in the field of physics. The number of participants from other fields who had been abroad was too low ($N \leq 15$) to generalize results on the duration of research stays abroad.

2.11. Infrastructure

For successful research in general and doctoral research projects in particular, state of the art laboratory and infrastructure facilities are as vital as are efficient administrative and technical support for the scientists.

The centers offered a wide range of facilities and services, such as administrative and technical support, workspace, laboratory equipment, access to libraries and journals, and graduation support (Fig. 2.54). With the exception of graduation support (e.g. help in getting journals' copyright permissions to use a published article for publication in a cumulative dissertation), which is offered on average to 84 % (range from 44 % to 97 %) of the participants, all services and facilities are available to more than 95 % of the respondents, with some variation at the center-level.

The quality of the offered services and facilities is generally rated to be (very) good, with laboratory equipment, access to libraries and journals, and workspace achieving positive ratings of about 80 %, followed by technical (71 %), administrative (63 %), and graduation (63 %) support (Fig. 2.55). These values differed between the centers, but were generally high.

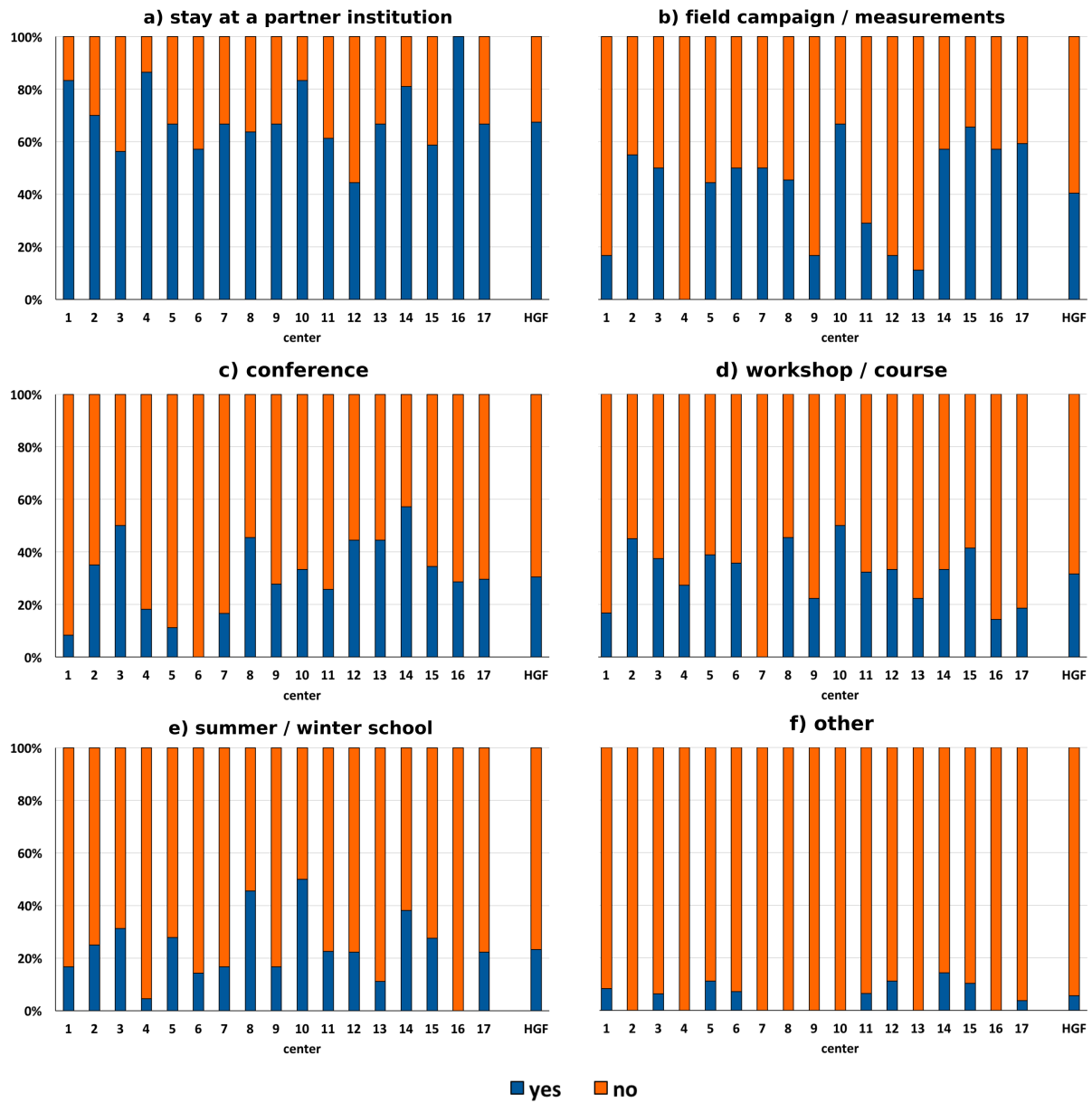


Figure 2.52.: Purpose of research stay abroad.

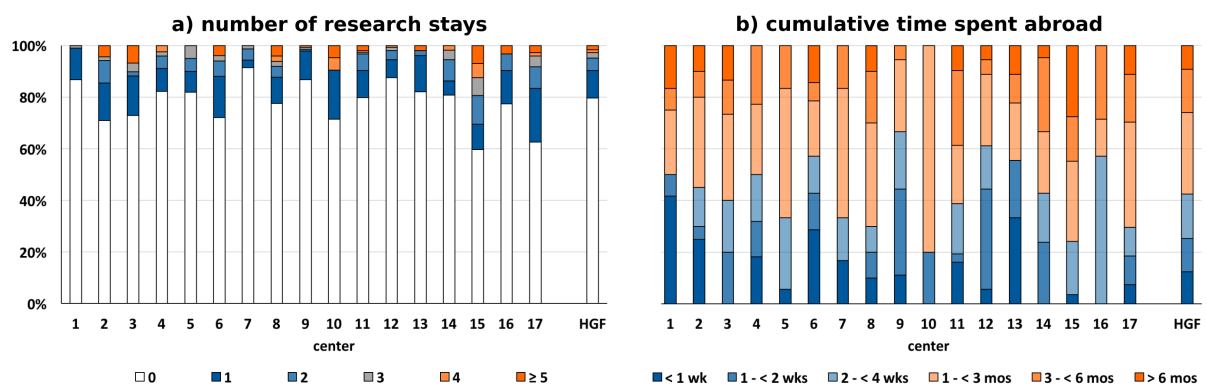


Figure 2.53.: Number of research stays abroad (a) and cumulative time spent abroad (b).

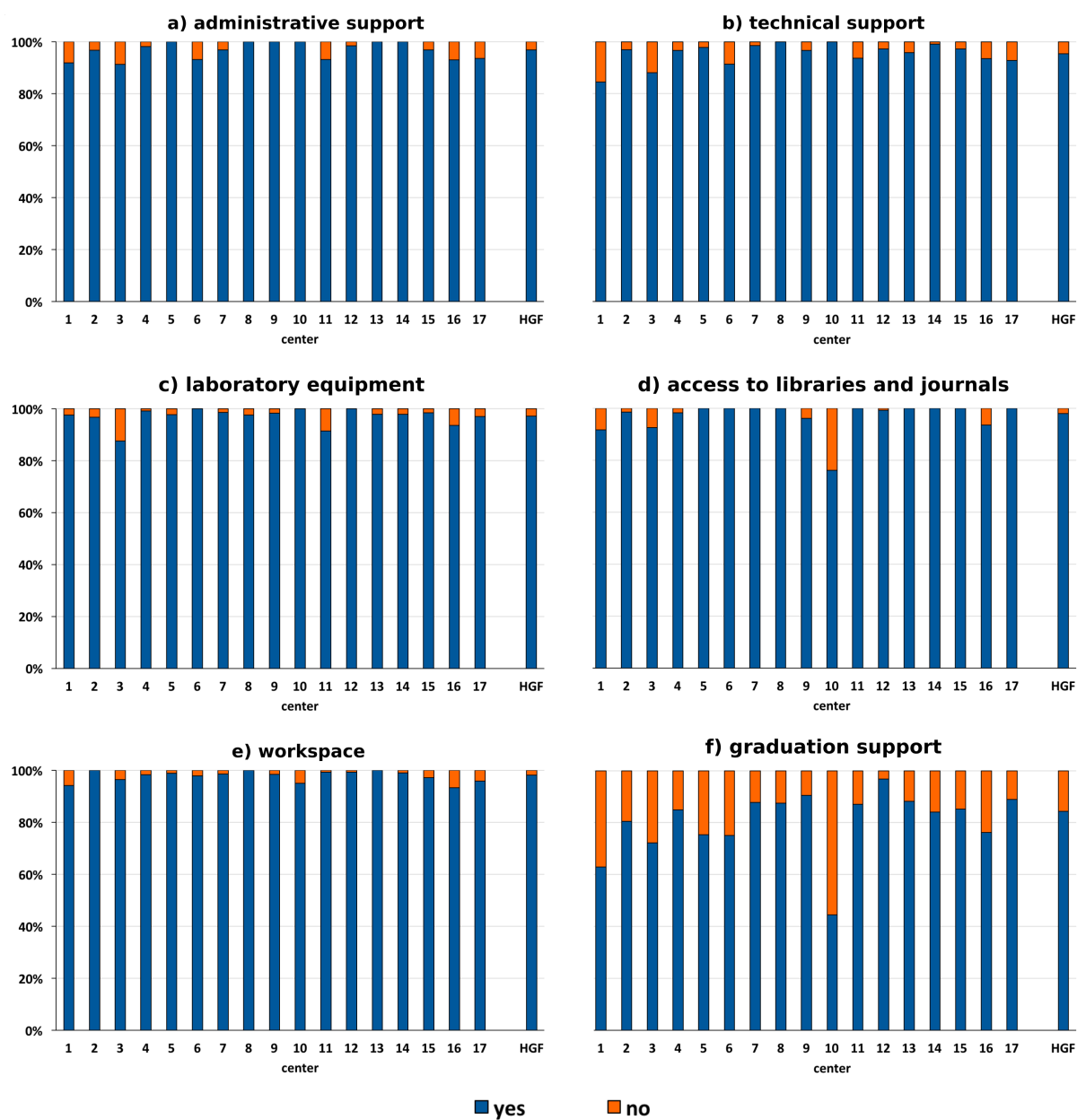


Figure 2.54.: Availability of infrastructure facilities and services to doctoral researchers.

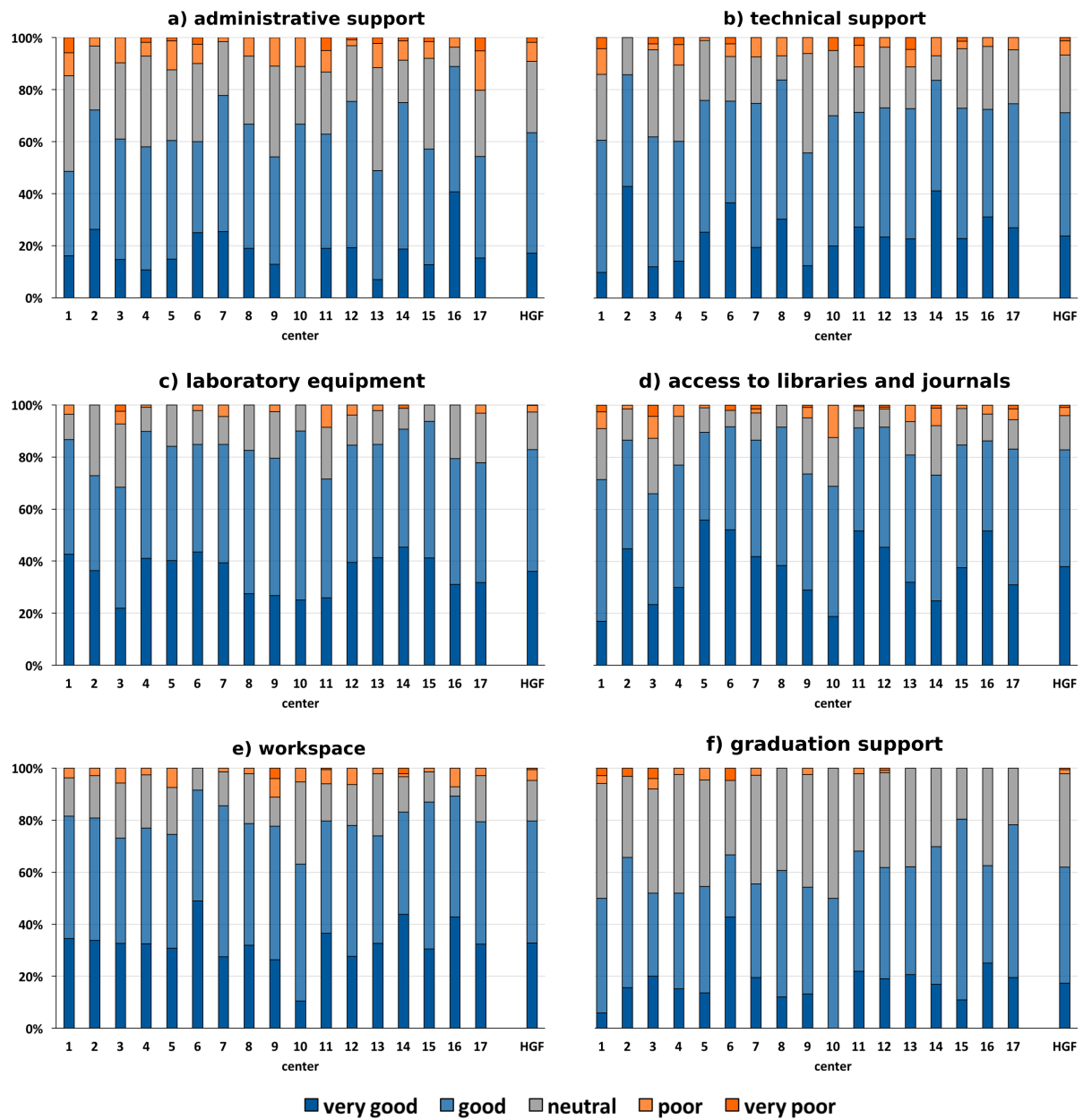


Figure 2.55.: Ranking of services and facilities offered by the centers.

2.12. Career perspectives

A doctoral degree qualifies for a broad variety of jobs. It is required for an academic career and valued outside academia due to the diversity of skills doctoral researchers obtain while working on their project.

The participants were asked for their career visions after obtaining the doctoral degree. To answer this, they had to rank eight given options according to their preferences (Fig. 2.56). The given options were: (I) stay in academia (e.g. doing a postdoc); (II) non-academic scientific work (e.g. industry, government); (III) non-academic, non-scientific work; (IV) start my own business; (V) further education (e.g. another PhD, a MBA); (VI) take a break; (VII) other; (VIII) I don't know yet.

Participants indicated that they preferred to pursue a scientific career, either within academia or outside, with the later being slightly more preferred (30 % vs. 35 %; range for both from 10 % to 47 %; Figs. 2.56 a and b). Consequently, a scientific career either within (18 %; range: 8 % to 38 %) or outside academia (33 %; range: 19 % to 48 %) ranks top with regard to second priorities. 16 % (range: 4 % to 29 %) indicated that their second priority would be non-academic, non-scientific work (Fig. 2.56 c). The preferred option indicated as third highest priority is non-academic, non-scientific work (25 %; range: 14 % to 48 %), followed by (non-)academic scientific work (~12 %; range ~4 % to ~29 %). Between 7 % (1st priority; range: 0 % to 14 %) and 15 % (3rd priority; range: 0 % to 29 %) of the participants planned to take a break after having obtained the doctoral degree (Fig. 2.56 f).

Apart from the highly prioritized work in science, a substantial amount of respondents (on average 14 %; range from 7 % to 35 %) indicated that they did not know yet what to aim for after their doctoral project (Fig. 2.56 h).

The distribution of ranked options showed only minor variations when the time already spent on the project is considered (appendix Fig. A.2).

Irrespective of their future visions, 60 % of participants indicated that they (completely) agreed with the statement 'I would like to work in Germany after I complete the PhD', which contrasted the 11 % indicating to (completely) disagree (Fig. 2.57). When the participants' nationality was taken into account, (complete) agreement by Germans slightly increased to 67 %, and decreased (markedly) for doctoral researchers from within the EU (43 %) and outside the EU (52 %), respectively. (Complete) disagreement followed a comparable trend: German doctoral researchers reported 8 %, European ones claimed 22 % and non-European ones summed up to 13 %.

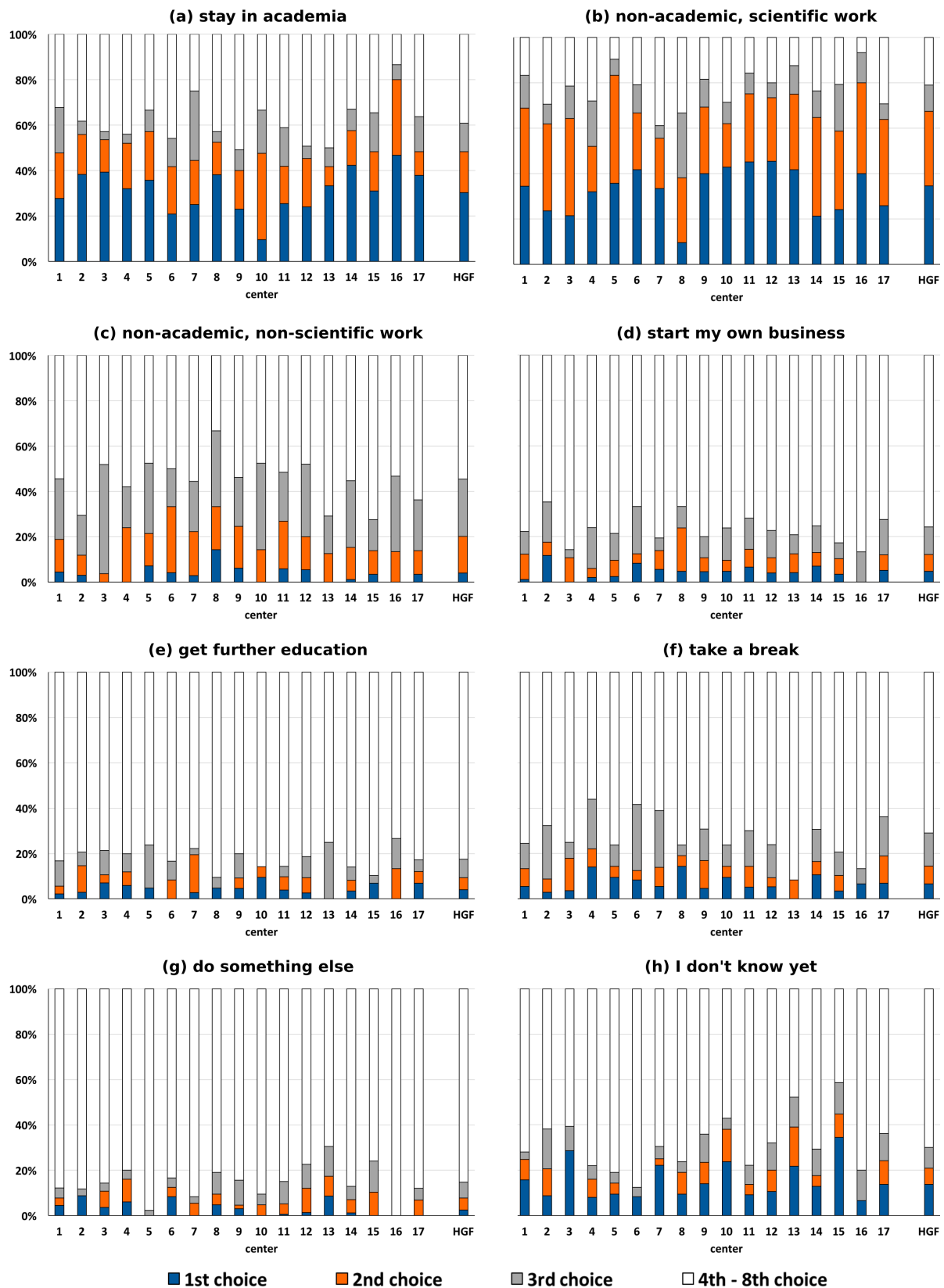


Figure 2.56.: Ranking: what to do next after having obtained the doctoral degree.

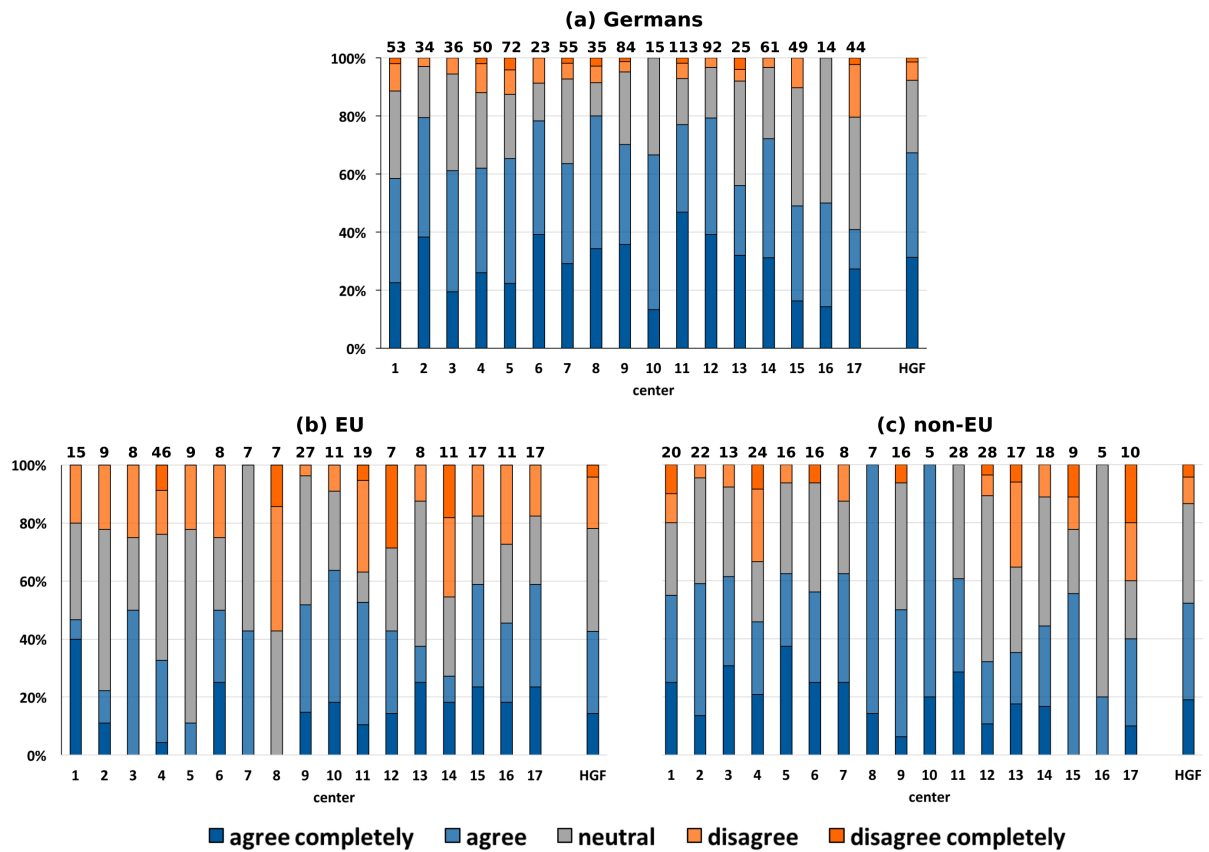


Figure 2.57.: Agreement with the statement “I would like to work in Germany after I complete the PhD” according to nationality. Number on top of the bars give number of respondents.

3. Discussion

The results of the survey reveal pronounced differences between the individual Helmholtz centers, leading to not equal working conditions for doctoral researchers across the association, which deviate from the recommendations made by the Helmholtz Association's PhD guidelines. The most common reasons for these differences are discussed below. However, discussion of center-specific survey results with the respective boards, staff councils and graduate schools, will be essential to raise the working conditions for doctoral researchers to a common standard in line with the Helmholtz Association's PhD guidelines¹.

3.1. Strengths and limitations of this survey

The purpose of this survey was to assess the current state of the general situation of doctoral researchers within the Helmholtz Association and at its individual centers. One big challenge was the complexity of the Helmholtz framework: 18 individual centers, sometimes located at one single site, sometimes distributed over multiple sites, have different organizational structures and may have or may not have graduate schools, which are sometimes only accessible for parts of the centers' doctoral researchers. Consequently, the *Helmholtz Juniors* extensively promoted the survey. Nevertheless, reaching all the associations' doctoral researchers was structurally limited (e.g. mailing list were nonexistent or did not contain all doctoral researchers) and sampling bias cannot be excluded; but, a total participation rate of 23 % shows a fair outreach and reduces the effect of internal sampling bias.

Enabling access to the survey with a non-personalized link has the advantage that participation is relatively easy but possesses the peril that the link might be misused by some of the receivers to participate in the survey multiple times or to make it available to persons not being part of the target group. It was not possible to guarantee that all potential participants received access to the survey with a personalized link.

This survey targeted all doctoral researchers, who were working on a project affiliated with one of the Helmholtz centers. This included participants being funded by the centers, participants with external funding, those working on collaborative projects or those with supervisors at a Helmholtz center. Thus, calculating a reference figure to determine the participation rate is difficult as not all centers did know how many doctoral researchers were affiliated with them at the time the survey was online. Consequently, the participation rate is based on the number of doctoral researchers, which could have been reached by the various channels used for the distribution of the participation link. This number has been updated by contacting the centers at the end of April 2017.

Similar to the total number of doctoral researchers at Helmholtz centers, data regarding gender and nationality of doctoral researchers are not recorded and / or accessible. Hence, it cannot

¹Helmholtz Association (2015): Guidelines for the completion of PhD projects within the Helmholtz Association

be concluded that the participants represent the population of doctoral research within the Helmholtz Association or the individual centers.

This survey provides the only dataset assessing the general situation of doctoral researchers across the entire Helmholtz Association. With this, it also allows for a comparison between the association's individual centers and detailed analysis of the framework for pursuing a doctoral degree with the Helmholtz Association.

3.2. Type of funding

Despite the overall high proportion of contracts, a substantial amount of doctoral researchers (20 %) were funded by stipends (Fig. 2.27), and at some centers, stipends were the predominant funding source. This is striking, especially considering that the net income of stipend holders is, on average, lower than that of contracted doctoral researchers (Fig. 2.31); in addition, the net income of those with an external stipend is lower than that of those with an internal stipend (refer also to section 2.6.2).

Additional financial burdens for stipend holders further reduced the monthly income when compared to contracted doctoral researchers. From their relatively low net income, stipend holders had to cover health insurance and other social insurances themselves. For their health insurance, stipend holders have to pay the complete fee (14.6 % of gross income), as they are considered as 'self-employed' in the public German health insurance system. In contrast, contracted doctoral researchers share this with their employer (i.e. their Helmholtz center).

After the costs for insurances are deduced from their net income, most stipend holders (external ones in particular) with less than €1,300 net income have to live of an actual income close to the poverty line (€969 for single person households²). This inequality increases further for doctoral researchers with children as parental leave and "Elterngeld" are lacking for stipend holders.

This situation is intensified by the fact that stipend holders do not have an employment status. Therefore, they lack social security; they do not get any unemployment insurance or pension savings, and are not insured for accidents when travelling to, from, or for work. Additionally, their general insurance status at work is often unclear.

As there may not be a working contract between a stipend-holder and their center, stipend-holders may not have equal access to infrastructure and facilities as peers who are contractually employed at the same center; this may result in (administrative) obstacles and/or slow the progress of their doctoral research.

A common argument against the aim to abolish stipends is that this is a problem forced onto the system from outside, i.e. international funding sources. The results of this survey show that there is a trend for international participants to be funded by stipends: 14 % of Germans do have a stipend vs. 20 % of EU- and 40 % of non-EU-participants(see also section 2.6.1).

However, a closer look at the data reveals that the argument of stipends being externally forced onto the system is valid only to a limited degree for at least two reasons: (I) 57 % of the stipends are internal ones, i.e. they are awarded from the centers, the association or the graduate schools compared to 39 % of stipends from external sources. At the three out of the four centers where the amount of stipends is above the HGF-average of 25 %, namely centers

²http://www.boeckler.de/wsi_50647.htm

3 (64 % stipends), 6 (33 % stipends) and 12 (47 % stipends), internal stipends make up 94 %, 86 % and 95 %, respectively, of all stipends.

(II) The nationality of participants from centers 3 (63 % Germans, 14 % from within the EU and 24 % from outside) and 12 (64 % Germans, 13 % from within the EU and 21 % from outside) differs only slightly from the one of the entire association (63 % Germans, 19 % from within the EU and 25 % from outside). Consequently, and under the assumption that stipends are forced onto the system from outside, the amount of stipends at these centers should differ only slightly from the average one. However, this is obviously not the case. Although this distribution of nationalities is different at centers 6 and 13 (48 % Germans, 16 % from within the EU; 31 % from outside and 50 % Germans, 14 % from within the EU; 34 % from outside) the deviation with regard to the amount of stipends from the average can not (completely) be attributed to the differing background of the participants. However, reasons at center 13, where 41 % of participants have stipends, might be more complex than at centers 3, 6 and 12: 50 % of the participants with stipends have an internal one and 39 % have an external one. But German participants sum up to 50 % as well (14 % are from within and 34 % from outside the EU).

Altogether, stipends are of significant social and financial disadvantage when compared to contracted doctoral researchers. Although stipend holders spent slightly more of their working time on their project and less on other tasks (teaching, supervision, equipment maintenance, etc.) than doctoral researchers with contracts, and although some stipend holders have longer-funded project durations than their peers with contracts, we doubt that the scientific reward stipends are commonly assigned to compensate for the structural inequality listed above.

Additionally, even if stipends might be forced onto the association and its centers from outside, we consider it due to its size and influence as capable to set standards for the employment situation of doctoral researchers in Germany. Consequently, the association should serve as example and reduce the use of stipends for young researchers to a minimum.

Considering the fact that the inequality of stipends compared to contracts had been under discussion already in 2014, a comparison between the results of the *Helmholtz Juniors* surveys in 2014³ and 2017 reveals an only marginal improvement over these three years. In 2014, the overall amount of stipend holders was 22 %, which is with 20 % similar in 2017. Compared to 2014, where two centers had more than 50 % of participants working on stipends, in 2017, only one center remained with more than 50 %.

Our results underline the existing demand to abolish stipends and to replace them with working contracts according to at least 65 % of the TVöD/L collective agreement to provide equal working conditions for all doctoral researchers across the Helmholtz Association, as it has been requested by the *Helmholtz Juniors* in their statement from August 2016 (see appendix A.7).

3.3. Working conditions

One reason for the large variability in working conditions within the Helmholtz Association are the different contract types and related regulations of contracted doctoral researchers. Although the majority of survey participants had working contracts according to the TVöD/L collective agreement (Figs. 2.27 and 2.28), some Helmholtz centers had a high number of PhD subsidiary

³https://www.helmholtz.de/fileadmin/user_upload/06_jobs_talente/Helmholtz-Juniors/Heju_Survey_2014_report.pdf

contracts (Fig. 2.28). Differences in the number of annual vacation days were mostly related to the different contract types as for PhD subsidiary and ‘other’ contracts, 20 days of vacation were typical (Fig. 2.37). This is in contrast to participants with mainly TVöD/L contracts for which 30 days of vacation were standard. Consequently, these differences in contract type accounted for the differences with regard to vacation days seen by center.

The difference between centers in contracted working hours was also substantial and varied between 50 % and 100 % of a full-time equivalent position (commonly either 50 %, 65 %, 75 %, or 100 % full-time equivalent). Our results show that one of the reasons for this variability can be attributed to the different research fields within the Helmholtz Association, and therefore differences in subject related funding standards (see for example DFG recommendations⁴).

Regardless of their funding source, nationality, gender or center, all doctoral researchers face a high workload and stress irrespective of the Helmholtz center. While most of the working time was spent on the doctoral project itself, on average 35 % of working time was dedicated to additional, non-project-related tasks. This also affects stipend holders, who are considered as independent, but in reality cannot fully concentrate on their research project. Participants were generally satisfied with their work-life balance, but those with a higher workload were more likely to have considered resigning from their project.

However, the consideration to resign from the doctoral project is related to satisfaction with supervision (see section 2.5.3), which shows how important good supervision is for the success of a doctoral project. In free-text answers on supervision, many participants indicated that they have the impression that their supervisors expect them to work more, also during their free time, holidays, and weekends. Typically, supervisors miss convincing them otherwise, if this is not their expectation.

The high workload, often combined with only 20 days of vacation, results in an inflexibility, which affects the work-life-balance of doctoral researchers in general and, in particular, affects doctoral researchers with children. In the free-text answers, one of the most criticized aspects of pursuing a doctoral degree was a bad work-life-balance. This systematic inflexibility and pressure causes an increasing number of young researchers (83 % of all doctoral graduates⁵) to leave academia after their doctorate.

Most likely a combination of these above mentioned different factors, such as low income, missing or bad supervision, strict time frames, and high workload increases the frustration level of doctoral researchers, which can lead to mental health problems⁶, or terminating the project (33–43 % in Germany throughout all disciplines⁵).

3.4. Duration of project and funding

As the target group of this survey were doctoral researchers, it is only possible to draw conclusions on participants’ expected project duration, not on the actual project duration. However, our results show that a substantial amount of doctoral researchers spent more than three years

⁴DFG Formblatt 55.02 “Hinweise zur Bezahlung von Promovierenden” [10/11], http://www.dfg.de/formulare/55_02/55_02_de.pdf

⁵BuWin 2017: Bundesbericht Wissenschaftlicher Nachwuchs 2017 (<http://www.buwin.de/>)

⁶Levecque, K., Anseel, F., De Beuckelaer, A., van der Heyden, J., Gisle, L. (2017): Work organization and mental health problems in PhD students. *Research Policy* 56(4), 868–879. <https://doi.org/10.1016/j.respol.2017.02.0089>

working on their project (Fig. 2.7 a) and almost 90 % of the participants expected their project to take more than three years (Fig. 2.7 b). To our knowledge there are no statistics on the duration of doctoral research projects within the Helmholtz Association available. A review of studies assessing duration of doctoral research projects in Germany⁵ indicates that the average duration varies between 3.9 and 4.4 years (median: 3.3 to 3.6 years). We are aware of the difficulty for the centers to collect such data, as the submission of the dissertation, our suggested milestone to define the end of the project, is within the jurisdiction of the universities, i.e. the centers do not necessarily receive a notification once a dissertation has been submitted. Nonetheless, we highly recommend that the individual centers start recording statistics on project duration. This would enable the association to assess whether funding periods correspond with the actual doctoral project duration.

Despite this lack of data on the actual duration of doctoral research projects within the Helmholtz Association, the survey results strongly indicate that the average doctoral research project takes more than three years and substantially exceeds the timeframe for which funding is given. As agreed upon by all centers and manifested in the PhD guidelines, the duration of a doctoral research project within the Helmholtz Association should be between three to four years. Additionally, “funding [for the research project] is sought for the period until the submission of the dissertation to the university”. However, for almost 40 % of the participants initial funding was not guaranteed for at least three years (Fig. 2.33). Further, our survey reveals a broad uncertainty among the participating doctoral researchers regarding the opportunity for extensional funding after the initial funding period expired (Fig. 2.34). Extension for funding was only available for 20 % of the participants, while 46 % had the possibility for an extension (under certain conditions), and 22 % did not know if there was any possibility for an extension. Uncertainty about funding, especially in the late stages of a doctoral research project, hinders a successful completion of the doctoral project.

Projects exceeding the anticipated duration might be especially problematic for those doctoral researchers being third party funded, because some funding programs limit their support for a doctoral project to three years⁷. This consequently implies a high risk for those doctoral researchers being third party funded to run out of funding before the project is finished. In those cases, where there will be no successful follow-up grant, doctoral researchers will have to rely on the availability of budget funding from their center, on their savings or unemployment benefits, if they do not want to resign from the project. This is especially problematic for stipend holders who are not entitled to unemployment benefits implying a high risk for them to be dependent on basic subsistence.

As the Helmholtz PhD guidelines state that everyone should be paid until the submission of the thesis, the survey results show that these guidelines are insufficiently implemented. Consequently measures should be taken to narrow the gap between (expected) project duration and funding period. Extending funding periods might be the obvious solution to this problem. We are well aware that, especially in the case of third party funding, the possibilities to change the current status for the entire association as well as for the individual centers are limited. However, extending the funding period is only one potential solution. Assuming that the project was initially designed in a way that its completion was possible within the funding period, reasons

⁷<https://www.bmbf.de/foerderungen/bekanntmachung-493.html>

for the extension of project duration could also be seen in (a) the doctoral researcher themselves, (b) inadequate supervision (c) or in an unrealistic project design. The latter could imply that the amount of work supposed to be done was too much for the expected time, especially when considering that pursuing a doctoral degree includes learning to develop and pursue own research ideas and goals; or that the estimated project progress was unrealistic, i.e. potential failure of experiments or the time necessary to develop new workflows were underestimated or not accounted for. Aspects (b) and (c) should be covered by thesis committees. However, the survey results show that there is room for improvement (see figure 2.21). It is at the individual supervisors, centers and representatives of the doctoral researchers to find ways to narrow the gap between funding and project duration.

3.5. Doctoral researchers with children

The results of this survey, including the free-text answers on this matter, indicated, that information about support for doctoral researchers with children (see figure 2.39) should be better communicated. Access to and availability of childcare facilities at the centers could be improved. This is of special importance, considering that most of the doctoral researchers' children were toddlers.

Many parents stated that they were quite satisfied with the support they received. One of the positive aspects was that every contract was extended for the parental leave. In many projects work in the laboratory often comprises a significant part of the time invested. However, pregnant women, who are not allowed to work in the laboratory, do not have the possibility to compensate for this time by a contract-extension.

Furthermore, some free-text answers indicated that there are supervisors disapproving pregnancies during the period of doctoral research. We consider this attitude, irrespective of how rare it might be, as highly detrimental to the association's efforts to be a family-friendly employer. It further discourages early-career researchers to aim to combine a successful scientific career and a family, especially when it is considered that doctoral researchers with children, despite already having a high workload, are not able to work as much as their peers without children (see section 2.7). It helps parents that there are centers offering flexible working hours and the possibility to work from home providing flexible working conditions and environments for parents. It could be helpful, if the centers also offered support to plan and organize the parental leave together with the supervisor.

The combination of both, having children and being funded by a stipend, results in major financial problems, as the net income is commonly not sufficient to provide a living for a family. Additionally, these doctoral researchers are not eligible to be paid for parental leave, adding further financial stress. Another issue mentioned in free-text answers was that the amount of only 20 holidays per year was particularly insufficient for parents. Some childcare facilities had more closing days per year than parents had holidays. This should also be taken into account when planning childcare facilities at the centers.

Overall, we see missing information as a main problem doctoral researchers with children face. Consequently, we strongly support the efforts of the Helmholtz Association and its centers to

be a family-friendly employer and suggest to better emphasize and communicate the existing possibilities to support doctoral researchers with children.

3.6. International doctoral researchers

Overall, the situation and integration of international doctoral researchers within the Helmholtz Association showed satisfying results. Nevertheless, international participants very commonly experienced language barriers at their center and / or working group (Figs. 2.42 b and c; see also Deczkowska, 2017⁸). International doctoral researchers stated that they often had problems especially in mostly German-speaking work groups, where sometimes meetings were held in German.

Learning the language of country is a key aspect of integration. However, this is not instantaneous and comes second to the doctoral research project. Additionally, German is usually not required for academic work (i.e. as publications are most commonly in English), and many international doctoral researchers will be in Germany only temporarily. Taking into consideration, that most research institutes work and cooperate on international levels, it would be reasonable to facilitate e.g. administrative processes to the international staff. Many of the international doctoral researchers stated, that they experienced problems with administrative tasks since most documents and emails were exclusively in German. Although it is highly appreciated that international researchers receive help from their colleagues, in the case that not all relevant information are provided in a language they understand (Figs. 2.42 c), we strongly recommend that all centers provide the essential information (i.e. strategic decisions or lab closures due to maintenance) in a bilingual way.

3.7. Participants' awareness of working and graduation conditions

One striking pattern we encountered during the evaluation of this survey was, that a large proportion of the respondents could not answer questions related to their immediate working environment, such as the possibility to get help in conflict situations or about the existence of supervision agreements. This is understandable to a certain degree; i.e. if there were never supervision conflicts, participants had no reason to inform themselves about the availability of help in the case of these conflicts. However, when it came to the use of supervision agreements or thesis committees, it seemed astonishing that large amounts of respondents were not aware if these features were used at their centers (Fig. 2.21). This could reflect that access to this information is not easy or that there is no need for doctoral researchers to inform themselves about these aspects. We suggest that the *Helmholtz Juniors* and the representatives of the doctoral researchers at the individual centers, in cooperation with the local administrations and graduate schools, try to identify the individual reasons for this, in part, lack of knowledge and discuss ways to ensure that doctoral researchers will be informed better in future.

⁸Deczkowska, A. (2017): Let's talk about language barriers. Science 356, 978.

3.8. Implementation of PhD guidelines

The intention of the Helmholtz Association’s PhD guidelines is to define minimum standards for early-career researchers during their doctoral research project and to establish and maintain a culture of both good scientific and good educational practice. Apart from implementing formal tools, such as supervision agreements and thesis committees, the guidelines define cultural values for the ideal environment to promote the evolution of junior researchers. However, it is difficult to capture such cultural aspects based on intrinsic values; therefore, the survey focused on the implementation of formal aspects, including the supervision agreements, to assess the level to which the association’s PhD guidelines are followed and implemented.

The “implementation index”, a modified version of the “supervision index” used in previous survey reports, is used to estimate the level of the guidelines’ implementation. The index used in this report compiles information on the existence and use of (I) supervision agreements, (II) thesis committees, (III) project outlines and (IV) progress reports. To calculate the index, a value of either -1 (not used), 0 (not known, if used) or +1 (used) was assigned to each of the above listed items. The sum of these values comprises the index, so a value of 4 represents the highest degree of implementation of the formal aspects of the association’s PhD guidelines.

In 2017, the index reveals progress reports, with an average value of 0.75, as the most commonly used formal aspect suggested by the guidelines. This is followed by thesis committees (0.51), supervision agreements (0.43) and project outlines (0.29). This sums up to an average index for the entire association of 1.97 with a range between centers from 0.50 to 2.99 (Fig. 3.1).

These results rely on the participants’ awareness of the existence of these formal aspects, which was limited in e.g. the case of thesis committees and supervision agreements (see Fig. 2.21). This reveals potential for improvement of both, implementing the formal aspects according to the Helmholtz PhD guidelines and rising the awareness of such formal tools amongst the doctoral researchers. We hope for vivid discussions on the level of the individual centers.

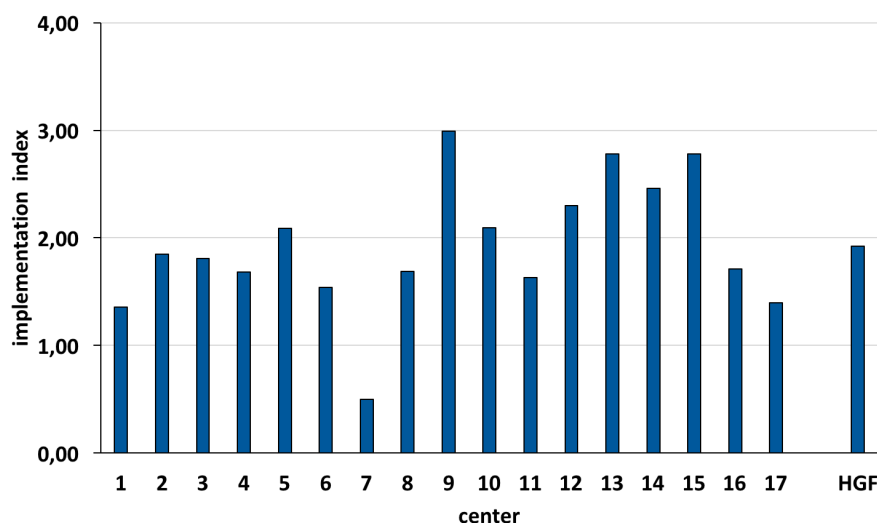


Figure 3.1.: Index using the formal aspect of the Helmholtz Association’s PhD guidelines (existence of supervision agreements, thesis committees, project outlines and progress reports) to assess their level of implementation. The index’ maximum value, indicating a high degree of implementation, is 4.

4. Concluding remarks

This report presents the results of the fifth wave of the *Helmholtz Juniors PhD survey* run in spring 2017. It shows that the general situation of doctoral researchers within the Helmholtz Association and its centers is good, and that the association provides a promising environment for early-career researchers. However, some points have been identified and discussed in detail where changes are necessary. This includes differences with regard to the type of funding (contract vs. stipends) and the amount of annual vacation days, support for doctoral researchers with children, language obstacles international doctoral researchers face. This report suggests a number of potential measures to be taken such as to abolish the use of stipends and to provide all information in a bilingual way in order to eliminate these shortfalls. A joint effort of the *Helmholtz Juniors*, the individual centers and the association itself in cooperation with graduate schools and staff councils is encouraged to further improve the working conditions for doctoral researchers

List of Figures

2.1. Participation rate	7
2.2. Age distribution of doctoral researchers	8
2.3. University affiliation of doctoral researchers	8
2.4. Types of cooperation with university by center	9
2.5. Field of doctoral research by center	10
2.6. Field of doctoral research by gender	11
2.7. Time already spent on doctoral project and expected total project duration . . .	11
2.8. Existence of a written project outline and regular progress report	12
2.9. Planned type of dissertation	13
2.10. Required peer-reviewed publications for graduation	14
2.11. Required peer-reviewed publications as first author for graduation	15
2.12. Number of required publications for graduation other than peer-review	16
2.13. Number of peer-reviewed publications participants already have	17
2.14. Participation at conferences, workshops and courses	18
2.15. External cooperation within the frame of the doctoral research project	18
2.16. Satisfaction of doctoral researchers	19
2.17. Recommendations of participants to pursue a doctoral degree at their center . .	20
2.18. Aspects addressing the mental well-being of participants	22
2.19. Reasons to consider resigning	23
2.20. Relationship between considerations to resign and satisfaction with supervision as well as workload	24
2.21. Implementation of supervision agreements and thesis committees	25
2.22. Frequencies of supervisor meetings	26
2.23. Assessment of supervisor competencies	27
2.24. Satisfaction with supervision	28
2.25. Satisfaction with supervision as frequency of meetings with supervisor	29
2.26. Help in case of supervision conflicts	29
2.27. Distribution of funding types by center	30
2.28. Distribution of different contract types by center	31
2.29. Monthly net income among all participants	31
2.30. Income of participants by field of research	32
2.31. Variations in income by type of funding	32
2.32. Income stipend holders	33
2.33. Duration of financial support guaranteed at the start of the project by center . .	34
2.34. Possibility of contract extensions and potential additional requirements	35
2.35. Contracted and actual working hours	35
2.36. Distribution of working time	36

2.37. Days of vacation	37
2.38. Doctoral researchers with children and those planing to have (further) children .	38
2.39. Support for doctoral researchers with children	38
2.40. Distribution of nationality by center	39
2.41. Contact person for international doctoral researchers	40
2.42. Primary language for communication and language obstacles	41
2.43. Support from centers to learn German	42
2.44. Participation in German classes and reasons for not taking any	42
2.45. Integration of international doctoral researchers	43
2.46. Access to and enrollment at graduate schools	43
2.47. Items offered to doctoral researchers by their graduate school or other sources . .	44
2.48. Would you use the following items, if offered?	45
2.49. Average time spent per month on graduate school activities	46
2.50. Benefits from graduate schools	46
2.51. Permission and support to leave for research stays abroad	47
2.52. Purpose of research stay abroad	48
2.53. Number of research stays abroad and cumulative time spent abroad	48
2.54. Availability of infrastructure facilities and services	49
2.55. Ranking of services and facilities offered by the centers	50
2.56. Ranking: potential future occupations	52
2.57. Working in Germany after completion of the PhD?	53
3.1. Implementation Index of the Helmholtz Association's PhD guidelines	62
A.1. Distribution of working time. Differences between type of funding for the different tasks specified	99
A.2. Ranking: potential future occupations by years spent on the project	100

A. Appendix

A.1. Changelog

A.2. Supplementary figure: distribution of working time

A.3. Supplementary figure: career perspectives

A.4. Verfahrensverzeichnis

A.5. Datenschutzerklärung

A.6. Questionnaire

A.7. HeJu Statement on working conditions

A.1. Changelog

Compared to the first edition of this survey report from 15/12/2017, changes have been applied on the following pages:

- page 2: affiliation of Sophie Crux in the acknowledgments was changed.
- page 23: figure 2.19: numbers on top of bars were corrected and caption was modified.
- page 29: legend of figure 2.25 was wrong and was corrected.
- page 34: last paragraph of section *2.6.3 Initial duration of funding and potential extensions* was corrected as percentages related to possible funding extensions were incorrect.
- page 61: reference to figure 2.21 was invalid and was corrected.

A.2. Supplementary figure: distribution of working time

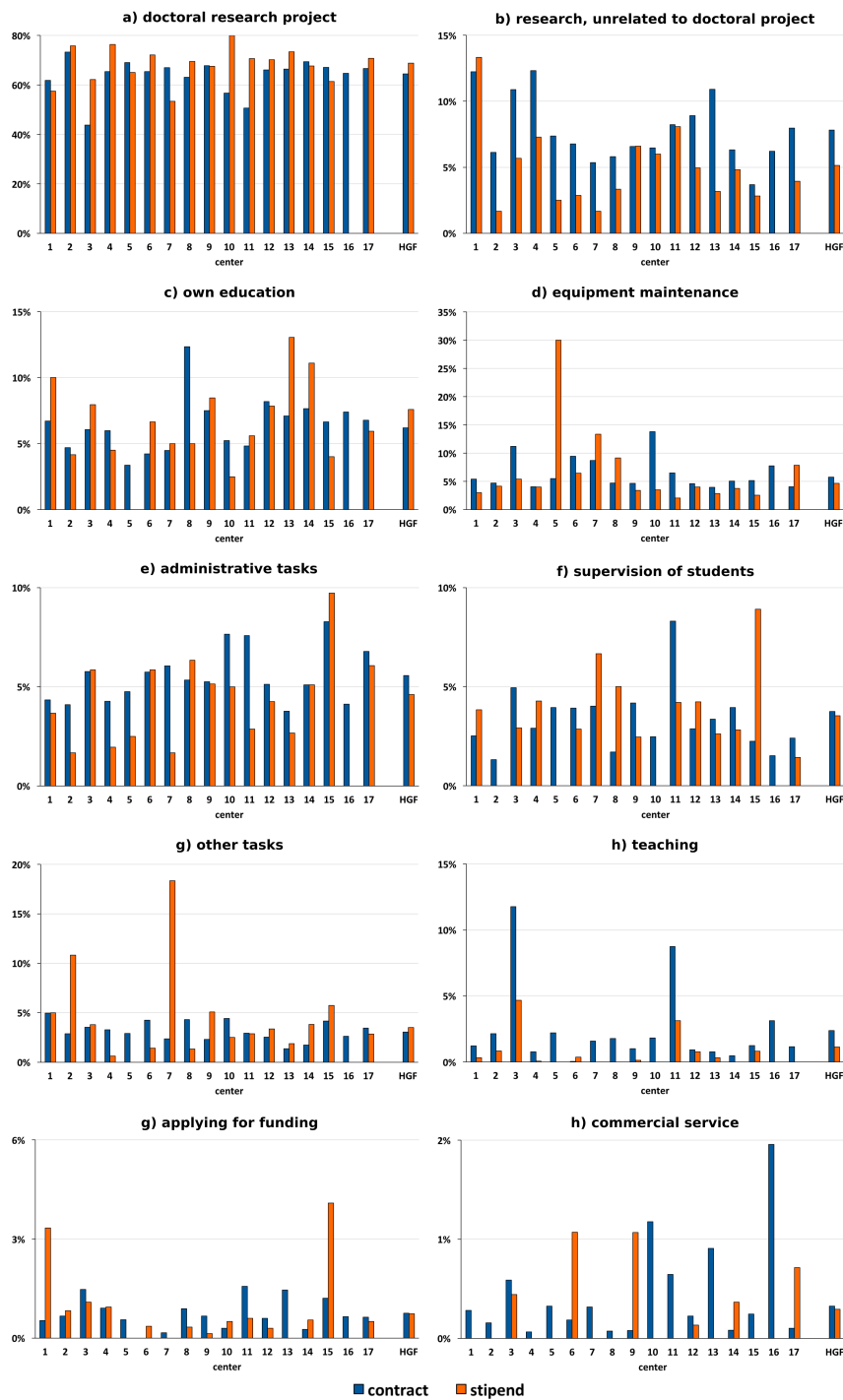


Figure A.1.: Distribution of working time. Differences between type of funding for the different tasks specified.

A.3. Supplementary figure: career perspectives

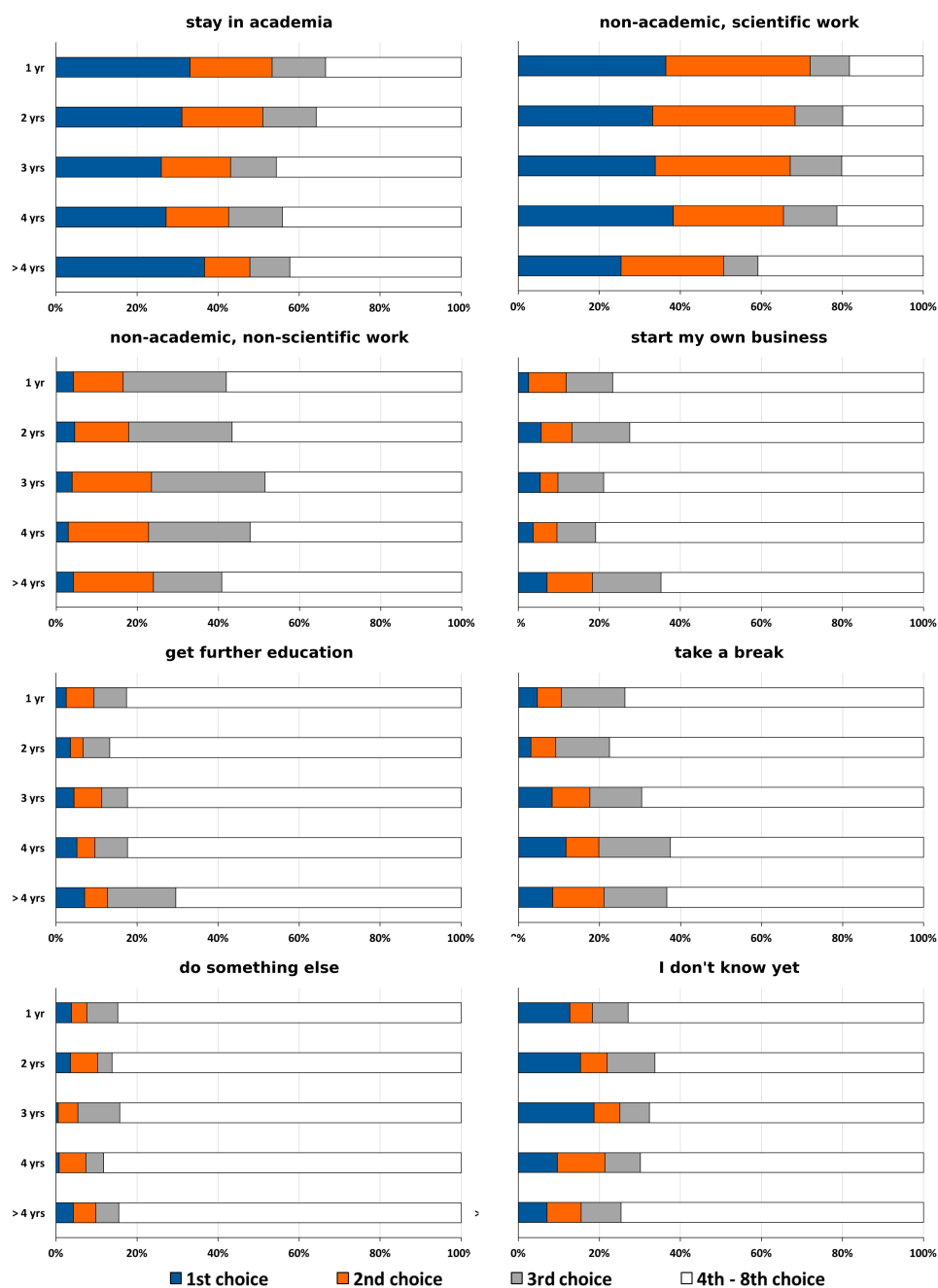


Figure A.2.: Ranking: potential future occupations by years spent on the project.

A.4. Verfahrensverzeichnis

Verfahrensverzeichnis

(gem. § 4g Abs. 2 und 2a BDSG)

2. Februar 2017

(1) Name, Anschrift, Telefonnummer und E-Mail der verantwortlichen Stelle

Helmholtz – Juniors (Doktorandenvertretung der Helmholtz – Gemeinschaft)
Arbeitsgruppe *PhD Survey*.

Sprecherin der Arbeitsgruppe 2016:

Danja Sarink
Division of Cancer Epidemiology
Deutsches Krebsforschungszentrum
Im Neuenheimer Feld 280
69120 Heidelberg

survey2017.heju@gmail.com

(2) Bezeichnung des Verfahrens

PhD Survey 2016 – 5. Welle der Befragung der Doktorandinnen und Doktoranden der Helmholtz – Gemeinschaft (bisherige Befragungen: 2008, 2010, 2012, 2014)

(3) Zweckbestimmung und Rechtsgrundlage der Verarbeitung

Die Befragung soll den Helmholtz – Juniors, der Doktorandenvertretung der Helmholtz – Gemeinschaft, eine Arbeitsgrundlage bieten, um die Interessen der Doktorandinnen und Doktoranden vertreten und Probleme ansprechen zu können. Dabei interessieren ausschließlich kumulierte Daten über ganze Struktur- und Themenbereiche. Aussagen einzelner Personen sind nicht als solche von Interesse und werden nur zur Gewinnung der kumulierten Daten erhoben. Die Teilnahme ist freiwillig und setzt die Einwilligung in die Datenschutzerklärung voraus. Diese wird verständlich zu Beginn der Befragung vorgestellt.

(4) Kreis der Betroffenen

Die Befragung richtet sich an alle Doktorandinnen und Doktoranden der Helmholtz – Gemeinschaft, unabhängig von ihrer Finanzierung oder ihrem Arbeitsort.

(5) Art der gespeicherten Daten

Erhoben werden objektive und subjektive Bewertungen der Rahmenbedingungen der Promotionsarbeit, sowie wahrgenommene Probleme und Wünsche. Demographische Daten (Alter, Geschlecht, etc.) werden nur zur Untersuchung von Korrelationen mit den Promotionsbedingungen erfasst (z.B. Diskriminierung anhand von Alter oder

Geschlecht). Sie lassen für die bearbeitenden Personen keinen Rückschluss auf die antwortende Person zu.

(6) Empfänger der Daten oder Gruppen von Empfängern sowie die jeweiligen Datenarten, wenn vorgesehen ist

(a) die Daten zu übermitteln: **nach der Übermittlung der Umfragerohdaten durch die durchführende Firma Questback (siehe Punkt 9), werden die passwortgeschützten Daten auf den Server des HelmholtzNets transferiert und dort gespeichert (siehe auch Punkte 10.2, 10.3 und 10.5).**

(b) die Daten innerhalb der öffentlichen Stelle für einen weiteren Zweck zu nutzen: **entfällt**

(c) die Daten im Auftrag verarbeiten zu lassen: **entfällt**

(7) Zugriffsberechtigte Personengruppen oder Personen, die allein zugriffsberechtigt sind

Die Daten sind nur für die maximal neun Mitglieder der Arbeitsgruppe *PhD Survey* zugänglich. Insbesondere wird Sorge getragen, dass Personalstellen der Helmholtz – Zentren keinen Zugang zu den Daten erhalten. Somit wird verhindert, dass einzelne Umfrageteilnehmer möglicherweise anhand demographischer Daten identifiziert werden.

(8) Fristen für die Prüfung der Sperrung und Löschung der Daten oder für die Sperrung und Löschung selbst

Die Daten werden für zehn Jahre gespeichert. Dadurch können nachfolgende Arbeitsgruppen Zeitreihenanalysen (Mehr-Punkt-Messungen) vornehmen und Zeitverläufe in den einzelnen Variablen abbilden. Die jeweiligen Sprecher der Arbeitsgruppe garantieren, dass die Daten nach Ablauf der Speicherfrist gelöscht werden.

(9) Allgemeine Beschreibung der eingesetzten Hardware, der Vernetzung und der Software

Die Befragung erfolgt über die Firma **Questback GmbH**, einen Anbieter für Online – Befragungen im akademischen Bereich. Dabei bestehen Unterauftragsverhältnisse mit Questback und der Datagroup Bremen GmbH sowie der Reisswolf Köln Akten- und Datenvernichtung GmbH. Die Befragung erfolgt SSL – verschlüsselt mittels Servern der Datagroup Bremen GmbH, die in einem BSI und ISO27001 zertifizierten Rechenzentrum betrieben werden. Der Datentransfer von den Servern auf den lokalen Rechner der Arbeitsgruppensprecherin erfolgt über eine verschlüsselte SSL – Verbindung. Sowohl die SSL – Verbindung, der Rechner und die Datendatei sind per Passwort geschützt.

(10) Getroffene technische und organisatorische Maßnahmen zur

- (10.1) Organisationskontrolle
Die Kontrolle der Organisation der Befragung obliegt der oben genannten Sprecherin der Arbeitsgruppe *PhD Survey*.
- (10.2) Zutrittskontrolle
entfällt
- (10.3) Weitergabekontrolle
Nach Übermittlung von UniPark werden die passwortgeschützten Daten auf dem Server des Helmholtz-Nets gespeichert. Zugang zu den Daten innerhalb des Helmholtz-Nets haben ausschließlich die Mitglieder der Arbeitsgruppe *PhD Survey*. Die Arbeitsgruppensprecher gewährleistet dies durch die Verwendung regelmäßig wechselnde Passwörter.
- (10.4) Datenträgerkontrolle
Die Daten befinden sich nur zur aktiven Bearbeitung unverschlüsselt auf dem passwortgeschützten, lokalen Rechner der Mitglieder der Arbeitsgruppe *PhD Survey*. So wird verhindert, dass ein unberechtigter Zugriff auf den Datensatz erfolgen kann.
- (10.5) Zugriffskontrolle
Die Daten sind nur für die Arbeitsgruppe *PhD Survey* zugänglich. Sie werden von den Sprechern verwaltet. Hierbei gewährleisten diese, dass die Datensätze nie mehr als neun Personen gleichzeitig zugänglich sind.
- (10.6) Eingabekontrolle
Es findet keine Dateneingabe außer durch die Teilnehmer der Befragung statt.
- (10.7) Verfügbarkeitskontrolle
Die Verfügbarkeitskontrolle der Daten, d.h. der Schutz der Daten gegen zufällige Zerstörung oder Verlust, obliegt den zugriffsberechtigten Personen.

A.5. Datenschutzerklärung

Datenschutzerklärung / Data security statement

The data privacy statement is in German as this text is a legal document. The English version can be found at the bottom of this (scrollable) text box.

Setze die Umfrage nur fort, wenn du mit der Datenschutzerklärung einverstanden bist.

Zweck der Umfrage

Um den Einfluss der Helmholtz Juniors zielgerichtet und im Interesse aller Helmholtz-Doktorandinnen und -Doktoranden nutzen zu können, benötigen wir Informationen über die Promotionsbedingungen an den verschiedenen Zentren sowie ein Gesamtbild über die Promotionssituation in der Helmholtz Gemeinschaft. So können gemeinsame Probleme identifiziert, an das Management herangetragen und mit unserer Unterstützung Lösungsansätze erarbeitet werden. Die dafür notwendige empirische Argumentationsgrundlage möchten wir mit dieser Umfrage schaffen.

Souveränität der Teilnehmer Die Teilnahme an der Umfrage ist **freiwillig und kann jederzeit abgebrochen werden**. Bei einem Abbruch fließen die Daten nicht in die Umfrage ein. Mit der Absendung des ausgefüllten Fragebogens stimmst du der Erhebung, Verarbeitung und Nutzung der Daten unter den genannten Bedingungen zu.

Transparenz

Nach Auswertung der Daten wird ein zusammenfassender Abschlussbericht an die Helmholtz Geschäftsstelle sowie an die Institutsleitungen zur Stellungnahme übergeben. Selbstverständlich steht der Abschlussbericht auch den Doktorandensprechern der Institute sowie allen Helmholtz Doktoranden zur Verfügung und wird zu diesem Zweck auch auf der [Homepage der Helmholtz Juniors](#) veröffentlicht. Dort finden sich auch die Ergebnisse der Umfragen vergangener Jahre.

Datenschutz

Die Umfrage wird ausschließlich von der aus maximal neun Mitgliedern bestehenden Arbeitsgruppe „Survey“ der Helmholtz Juniors durchgeführt und ausgewertet. Unverschlüsselte Rohdaten werden nicht an Dritte, auch nicht an Organe der Helmholtz Gemeinschaft, weitergegeben. Ein datenschutztechnisches Verfahrensverzeichnis mit Details zur Durchführung und Auswertung der Umfrage findest du [hier](#)¹. Die Datenerhebung erfolgt anonymisiert, Datum/Uhrzeit und IP-Adressen werden nicht gespeichert. **Eine Identifizierung der Teilnehmer ist weder gewollt noch beabsichtigt**. Aufgrund der von den Teilnehmern gegebenen Antworten kann jedoch nicht mit letzter Sicherheit ausgeschlossen werden, dass ein Rückschluss auf die Person erfolgen kann. Die Umfrage findet auf https-Servern statt. Sowohl der Download als auch die Rohdatendatei sind durch Passwörter gesichert. Alle Rechner und Datenträger, die mit dem Datensatz in Kontakt stehen, sind ebenfalls passwortgeschützt und nur den maximal neun Mitgliedern der Arbeitsgruppe „Survey“ der

¹ Link to the “Verfahrensverzeichnis”

Helmholtz Juniors zugänglich. Der Gesamtdatensatz wird zu Vergleichszwecken und für Zeitreihenauswertungen zehn Jahre lang gespeichert und durch den jeweiligen Sprecher der Arbeitsgruppe „Survey“ der Helmholtz Juniors verwaltet.

Die technische Durchführung der Onlineumfrage erfolgt durch die Firma *Questback GmbH*. Sie hat sich verpflichtet, die Regeln des Datenschutzes gemäß Bundesdatenschutzgesetz (BDSG), insbesondere §11 zur Regelung von Auftragsdatenverarbeitung, einzuhalten. Details zu unserer Vereinbarung mit der Firma *Questback GmbH* können über unsere [E-Mail-Adresse](#)² angefragt werden. Nach Abschluss der Umfrage und Übermittlung der Rohdaten durch *Questback* werden die Daten auf dem Server des Helmholtznets gespeichert. Auch hierbei ist durch Passwörter sichergestellt, dass die Daten ausschließlich durch Mitglieder der Arbeitsgruppe „Survey“ eingesehen werden können.

Vielen Dank im Voraus für deine Unterstützung!

Data Privacy Statement

Continue the survey only if you agree with the data privacy statement.

Purpose of the survey

Through this survey, we want to get a better understanding of the situation of doctoral researchers within the Helmholtz Association, and the strengths and weaknesses of their doctoral research and education. The survey creates a basis for Helmholtz Juniors to, in a target-oriented way, represent the interests of doctoral researchers and work towards improving their situation in cooperation with the Helmholtz management.

Sovereignty of the participants Participation in the survey is **voluntary and can be cancelled at any time**. In this case the data will not be processed within the survey. By taking part the participant allows the anonymous use and processing of the given data by the up to nine members of the Helmholtz-Juniors working group “survey”.

Transparency

The data collected within the survey will be evaluated and summarized in a report that will be handed over to the Helmholtz management and the boards of the individual centres. The report will also be provided to the PhD representatives as well as to all Helmholtz doctoral researchers via the [Helmholtz Juniors website](#). The results of previous surveys are available there as well.

Data security

The Helmholtz Juniors working group "survey" (with up to nine members) is responsible for the organization of the survey and the evaluation of the generated raw data. More detailed information and contact information are available [here](#) (the document - "Verfahrensverzeichnis" - is in German as it is a legal document). The survey is completely anonymized. Date/time and IP-adresse will not be recorded. **The assignment of data to an**

² heju.survey2017@gmail.com - deleted after the survey

individual person is not a purpose of this survey. Nonetheless, based on the individual answers provided by each participant it might be possible that the provided information allows conclusions about the participant. The survey is hosted on https-servers. Both the download of the raw data and the file itself are encrypted. All PC and storage devices are password-protected. The unencrypted raw data is exclusively handled by the working group "survey", and not circulated to any third party, including other members of the Helmholtz Association. The data will be kept for ten years to enable a time series analysis. The data will be administrated by the speaker of the working group "survey".

For technical implementation of the survey we use an online platform by the company *Questback GmbH*. Questback GmbH is obligated to comply with the current German data security laws and to adopt all measures necessary to save the data from unauthorized access and disclosure, in particular §11 BDSG (German federal data protection law). Our contractual conditions with *Questback GmbH* can be requested via e-mail. After transfer from *Questback* servers, data will be stored in a password protected file on the encrypted servers of the Helmholtz Association (Helmholtznet). Only members of the working group "survey" have access to the data.

Thank you in advance for your support! The English text is a summary. With respect to German data security policy please use the German statement as reference.

Ich stimme der Datenschutzerklärung zu. / I agree with the terms and conditions of the data privacy statement.

A.6. Questionnaire

Background

1) Please select your Helmholtz Centre

Please select...

Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (AWI)

Deutsches Elektronen-Synchrotron DESY Deutsches Krebsforschungszentrum (DKFZ)

Deutsches Zentrum für Luft- und Raumfahrt (DLR)

Deutsches Zentrum für Neurodegenerative Erkrankungen (DZNE)

Forschungszentrum Jülich (FZJ)

GSI Helmholtzzentrum für Schwerionenforschung

GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel

Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)

Helmholtz-Zentrum Dresden-Rossendorf (HZDR)

Helmholtz-Zentrum für Infektionsforschung (HZI)

Helmholtz-Zentrum für Umweltforschung (UFZ)

Helmholtz-Zentrum Geesthacht Zentrum für Material- und Küstenforschung (HZG)

Helmholtz-Zentrum München - Deutsches Forschungszentrum für Gesundheit und Umwelt (HMGU)

Helmholtz-Zentrum Potsdam - Deutsches GeoForschungsZentrum (GFZ)

Karlsruher Institut für Technologie (KIT)

Max-Delbrück-Centrum für Molekulare Medizin in der Helmholtz-Gemeinschaft (MDC)

Max-Planck-Institut für Plasmaphysik (IPP)

I am not a doctoral researcher, please disregard my answers

2) Please select your age

≤ 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | ≥ 33 | prefer not to answer

3) Please select your gender

female | male | prefer not to answer

4) Please select your nationality

German | non-German EU (incl. Norway and Switzerland) | non-EU | prefer not to answer

University

5) Which university are you affiliated with (with or without matriculating)?

I.e. the university that awards your doctoral degree.

Please select...

Aachen (RWTH)

Berlin (FU)

Berlin (HU) Berlin (TU)

Bonn (RFWU)

Bochum (Ruhr-Universität)

Braunschweig (TU)

Chemnitz (TU)

Cottbus (BTU)

Darmstadt (TU)

Dortmund (TU)

Dresden (TU)

Duisburg-Essen (U)

Düsseldorf (HHU)

Erlangen-Nürnberg (Friedrich-Alexander-Universität)

Essen (FOM Hochschule)

Frankfurt am Main (Johann Wolfgang Goethe-Universität)

Freiberg (TUBAF)

Freiburg (ALU)

Gießen (U)

Göttingen (GAU)

Halle-Wittenberg (MLU)

Hamburg (U)

Hannover (GWL)

Heidelberg (RKU)

Karlsruhe (KIT)

Kassel (U)

Kiel (CAU)

Köln (FH)

Köln (Uni)

Leipzig (Uni)

Mainz (Johannes Gutenberg-Universität)

Marburg (PU)

München (LMU)

München (TUM)

Münster (Westfälische Wilhelms-Universität)

Potsdam (U)

Stuttgart (Duale Hochschule BW)

Stuttgart (U)

Tübingen (EKU)

Würzburg (JMU)

other

6) Are you matriculated at an university?

yes, at the same university I am registered with
yes, at a different university
no

7) Are you in active cooperation with your university?

Please specify which of the following you do at your university.

attending classes cooperating with partners (in the frame of your doctoral project) (yes / no)
cooperating with partners (in the frame of a project different from your doctoral project)
supervision (of e.g. bachelor or master students) (yes / no)
teaching (yes / no)
use of laboratories (yes / no)
use of libraries (yes / no)
use of offices (yes / no)
other activities (please specify)

Doctoral Project 1

8) In which field do you conduct your doctoral research?

Please select...

Biology
Chemistry
Informatics / computer science
Earth and environmental sciences
Engineering
Languages, literature, culture, and arts
Law, economics, and finance
Mathematics
Medicine, health, and sport science
Physics
Social sciences and psychology
Veterinary medicine
Other

9) How long have you been working on your doctoral project?

Please enter the time since you started working on your project/thesis (including any time you spent working on your project without a contract).

≤ 6 months
6 months – ≤ 1 year
1 – ≤ 1 1/2 years
1 1/2 – ≤ 2 years
2 – ≤ 2 1/2 years
2 1/2 – ≤ 3 years
3 – ≤ 3 1/2 years
3 1/2 – ≤ 4 years

> 4 years

10) How much time do you think your doctoral research project will take?

Estimate the time between when you started working on your doctoral research project (irrespective of whether you had a contract) and when you (expect to) submit your thesis.

≤ 2 years

2 – ≤ 2 1/2 years

2 1/2 – ≤ 3 years

3 – ≤ 3 1/2 years

3 1/2 – ≤ 4 years

> 4 years

11) Was there a written project outline for your doctoral research at the start (within the first six months) of the project?

yes

no

I don't know

12) Is there a regular progress report in written and/or oral form?

written and oral

only oral

only written

no

I don't know

13) Will your doctoral research project result in a monograph (thesis/Doktorarbeit) or will you graduate by publication (kummulative Dissertation)?

monograph (thesis/Doktorarbeit)

by publication (kumulative Dissertation)

I don't know other

14) Please specify the number and kind of publications (whether published, accepted for publication, or submitted) the institute or university that administers your doctoral degree requires you to contribute to during your doctoral research project.

publications in peer reviewed journals (0/1/2/3/4/≥5/I don't know)

other publications (0/1/2/3/4/≥5/I don't know)

presentations, talks, posters (e.g. at your institute, a conference, etc) (0/1/2/3/4/≥5/I don't know)

15) On how many of these publications do you need to have first authorship in order to graduate?

publications in peer reviewed journals (0/1/2/3/4/≥5/I don't know)

other publications (0/1/2/3/4/≥5/I don't know)

presentations, talks, posters (e.g. at your institute, a conference, etc) (0/1/2/3/4/≥5/I don't know)

16) Up until now, how many publications based on your doctoral research project have you published in/are accepted for publication in/have you submitted to peer-reviewed journals?

(0/1/2/3/4/≥5)

17) On how many of these publications are you the first author?

(0/1/2/3/4/≥5)

18) Up until now, how many international conferences, workshops and courses have you participated in during your doctoral research project?

(0/1/2/3/4/≥5)

19) Up until now, how many national conferences and workshops have you participated in during your doctoral research project?

Exclude those organized only for your centre, graduate school, or university.

(0/1/2/3/4/≥5)

20) What do you hope to do after obtaining your doctoral degree?

Please **RANK** the following answers by assigning values from 1 (highest preference) to 8 (lowest preference) . Please use each value **ONLY ONE TIME**.

stay in academia (e.g. a postdoc)

non-academic scientific work (e.g. industry, government)

non-academic, non-scientific work

start my own business

further education (e.g. another PhD, a MBA)

take a break

other

I don't know yet

21) Indicate your agreement with the following statement:

I would like to work in Germany after I complete my doctoral degree (completely disagree / disagree / neutral / agree / completely agree)

22) Do you actively cooperate with any scientists from outside your Helmholtz Center on your research project?

By active cooperation we mean some form of regular exchange or joint work, not e.g. joined authorship on a paper with a large number of co-authors.

no
yes, with 1 – 2 external scientists
yes, with 3 – 4 external scientists
yes, with 5 or more external scientists

23) Do you think your research would benefit from collaboration with other Helmholtz Centers; does your research benefit from the existing collaboration?

yes, it would
no, it would not
yes, it does benefit from existing collaborations
no, it does not benefit from existing collaborations
I don't know

24) In the last three months, how often have you

felt confident about your ability to handle the workload of your PhD? (never / almost never / sometimes / often / very often / prefer not to answer)
felt confident about your ability to finish your PhD? (never / almost never / sometimes / often / very often / prefer not to answer)
felt that you were unable to work on your PhD? (never / almost never / sometimes / often / very often / prefer not to answer)
felt that you could not cope with all the things that you had to do? (never / almost never / sometimes / often / very often / prefer not to answer)

25) Have you ever considered quitting your PhD?

never
almost never
sometimes
often
very often
prefer not to answer

26) Would you care to tell us briefly why you considered quitting your PhD?

Multiple answers possible

due to the workload
due to the supervision
due to other reasons related to my doctoral research project
due to personal reasons
other reasons (you can specify or leave this blank)

27) What type of contract do you have?

Multiple answers possible

TVöD/L: employment (staff)
TVöD/L: employment (3rd) party funding
internal stipend (center, Helmholtz, grad school)
external stipend
topped-up stipend (e.g. inclusion of health care, etc.)
PhD-subsidy contract ("Doktorandenfördervertrag" / "Doktorandenvertrag")
working contract (not TVöD/L)
unemployment benefits
"mini job" (≤ 450 € / month)
freelancer
other funding
no funding
I don't know

28) How many days of vacation per year are defined in your contract?

≤ 19 days
20 days
21 – 24 days
25 – 28 days
29 days
30 days
 ≥ 31 days
my contract does not specify a number of vacation days
I don't know

29) How many working hours per week are defined in your contract?

15 – < 19.5 hours
19.5 – < 22 hours (50%)
22 – < 25 hours
25 – 28.5 hours (65%, 66%)
28.5 – < 31 hours (75%)
31 – < 35 hours
35 – 38.5 hours
38.5 – < 41.5 hours (100%)
41.5 – < 45 hours
45 – < 50 hours
 ≥ 50 hours
my contract does not specify working hours
I don't know

30) For how many years was financial support (income or stipend) for your doctoral research project guaranteed at the start of your project?

< 6 months
6 months - < 1 year
1 year – < 2 years
2 years – < 2.5 years
2.5 years – < 3 years

3 years – < 3.5 years
 3.5 years – 4 years
 > 4 years
 I don't know

31) If you cannot finish your PhD in the expected time, will your center or supporting agency extend your contract?

yes
 possibly, depending on a successful progress report
 possibly, depending on other factors (please specify)
 no
 I don't know

32) Approximately how many hours a week do you work?

Picture an average work week.

15 – < 19.5 hours
 19.5 – < 22 hours (50%)
 22 – < 25 hours
 25 – 28.5 hours (65%, 66%)
 28.5 – < 31 hours (75%)
 31 – < 35 hours
 35 – 38.5 hours
 38.5 – < 41.5 hours (100%)
 41.5 – < 45 hours
 45 – < 50 hours
 ≥ 50 hours

33) How do you distribute your working time?

Please input values as percentages, totaling 100%.

doctoral research project
 equipment maintenance
 Bachelor / Master candidate supervision
 Teaching
 Own education (e.g. classes, workshops, grad school)
 applying for funding
 administrative tasks
 research projects unrelated to doctoral research project
 commercial service
 other tasks

34) Right now, what is your monthly net income for the work on your doctoral research project?

Net income is the amount of money transferred to your bank account every month. Do not count any bonuses such as a Christmas bonus etc. Scholarship holders and freelancers: deduct tax and health insurance.

< €500

€500 – €700

€701 – €900

€901 – €1100

€1101 – €1300

€1301 – €1500

€1501 – €1700

€1701 – €1900

€1901 – €2100

≥ €2100

prefer not to answer

35) Do you receive the following extra payments?

yes

no

I don't know

performance bonus

Christmas bonus (i.e. "Jahressonderzahlung")

marriage bonus

child support (via your contract, not via the state)

other

36) You indicated that you receive some form extra payment. Please enter the approximate amount you receive.

If you don't know the amount you receive, leave the field blank.

37) You indicated you receive "other" extra payments, please specify

38) In which ways would your centre support a research stay abroad?

I am allowed to leave for a research stay, and have access to funding for research abroad from the graduate school at my centre [yes / no / I don't know]

I am allowed to leave for a research stay, and have access to funding for research abroad from other sources at my centre [yes / no / I don't know]

I am allowed to leave for a research stay, and have access to moral support (letter of support, finding of funding sources, etc.) [yes / no / I don't know]

I am not allowed to leave for a research stay on my contract (e.g. your contract or employer does not allow a research abroad) [yes / no / I don't know]

39) How many research stays abroad have you done during your doctoral research project?

- 0
- 1
- 2
- 3
- 4
- ≥ 5

40) How long was your research stay abroad?

In case of multiple research stays abroad, please enter the cumulative duration.

- ≤ 1 week
- 1 - ≤ 2 weeks
- 2 - ≤ 4 weeks
- 1 - ≤ 3 months
- 3 - ≤ 6 months
- > 6 months

41) What was the purpose of your research stay(s) abroad?

Multiple answers possible.

- field campaign / measurements
- summer / winter school
- stay at a partner institution (e.g. collaboration)
- conference
- workshop / courses
- other

42) Do you have a thesis committee?

- yes
- no
- I don't know

43) Does your Helmholtz Centre use supervision agreements?

- yes, and I signed one
- yes, but I didn't sign one
- no
- I don't know

44) You indicate supervision agreements are used, but that you don't have one. Why is this?

- Multiple answers possible.
- my supervisor didn't want one

I didn't want one
other, please specify:

We would like to know more about your supervision. We distinguish between “**primary**” and “**daily**” supervisor. These can of course be the same person. Your “**primary supervisor**” would be the **primary examiner** (Doktorvater) of your thesis.

Your “**daily supervisor**” would be the **person you actually meet with/ talk to regularly and discuss the progress** of your project.

45) Who is the **daily supervisor of your project?**

my primary supervisor
another professor
another senior scientist
a post-doc
someone else in academia
someone else not in academia
nobody
I don't know

46) Does your **daily supervisor work at your Helmholtz Centre?**

yes
no
I don't know

47) On average, how often do you meet with your **primary supervisor?**

less than once per month
once per month
every second week
once per week
more than once per week

48) On average, how often do you meet with your **daily supervisor?**

less than once per month
once per month
every second week
once per week
more than once per week

49) Indicate your agreement with the following statements related to your **primary supervisor:**

my primary supervisor knows much about my area of research (completely disagree/disagree/neutral/agree/completely agree)

my primary supervisor has enough time to discuss the progress of my work (completely disagree/disagree/neutral/agree/completely agree)
my primary supervisor can always help me (completely disagree/disagree/neutral/agree/completely agree)
my primary supervisor has stringent requirements for my work (completely disagree/disagree/neutral/agree/completely agree)

50) Indicate your agreement with the following statements related to your daily supervisor:

my daily supervisor knows much about my area of research (completely disagree/disagree/neutral/agree/completely agree)
my daily supervisor has enough time to discuss the progress of my work (completely disagree/disagree/neutral/agree/completely agree)
my daily supervisor can always help me (completely disagree/disagree/neutral/agree/completely agree)
my daily supervisor has stringent requirements for my work (completely disagree/disagree/neutral/agree/completely agree)

51) In general, how satisfied are you with:

your supervision (completely unsatisfied/unsatisfied/neutral/satisfied/completely satisfied)
your primary supervisor (completely unsatisfied/unsatisfied/neutral/satisfied/completely satisfied)
your daily supervisor (completely unsatisfied/unsatisfied/neutral/satisfied/completely satisfied)

52) Would your centre provide help in case of conflict with your supervisor?

yes
no
I don't know

53) Do you think that the help provided by your centre regarding supervisions conflicts is helpful?

Yes
No
I don't know

54) How could your supervision be improved?

55) Do you have children?

yes
no
prefer not to answer

56) Would you consider having children during your doctoral research project?

yes
no, mainly for reasons related to my doctoral research project

no, mainly for other reasons
prefer not to answer

57) Does your centre offer childcare (Kita)?

yes
no
I don't know

58) If your centre offers childcare, do/would you use it?

It is offered, and I have a place or could easily get a place
It is offered, but I'm not sure if I could get a place
It is offered, but I can't get a place (e.g. long waiting list)
It is offered, but I choose not to use it
It is not offered
I'm not sure / I don't know

59) Does your centre offer any other support for doctoral researchers with children?

The legal requirement of a contract extension after parental leave does not apply to time limited contracts as most doctoral researchers have them.

could you extend your contract or stipend by the duration of parental leave taken? (those on a stipend: over and above any extension available to all stipend holders) **(yes / no / I don't know)**

parents are allowed to work from home **(yes / no / I don't know)**

could you, occasionally/if absolutely necessary, take your children to your workplace? **(yes / no / I don't know)**

child support **(yes / no / I don't know)**

financial support for childcare during conferences, research abroad, courses, etc **(yes / no / I don't know)**

60) Do you have any additional comments regarding children and doing doctoral research at your centre?

61) How satisfied are you with the following:

your decision to pursue a doctoral degree (completely
unsatisfied/unsatisfied/neutral/satisfied/completely satisfied)

your doctoral research project (completely
unsatisfied/unsatisfied/neutral/satisfied/completely satisfied)

your work-life balance (completely unsatisfied/unsatisfied/neutral/satisfied/completely
satisfied)

your payment (completely unsatisfied/unsatisfied/neutral/satisfied/completely satisfied)

62) Are the following facilities available at your centre?

yes no I don't know

administrative support (centre administration) (yes / no / I don't know)
technical support (yes / no / I don't know)
laboratory equipment (yes / no / I don't know)
library and journal access (yes / no / I don't know)
workspace (yes / no / I don't know)
graduation support (submitting and defending your thesis) (yes / no / I don't know)

63) How do you rate the facilities at your centre?

administrative support (centre administration) (very poor / poor / neutral / good/ very good)
technical support (very poor / poor / neutral / good/ very good)
laboratory equipment (very poor / poor / neutral / good/ very good)
library and journal access (very poor / poor / neutral / good/ very good)
workspace (very poor / poor / neutral / good/ very good)
graduation support (submitting and defending your thesis) (very poor / poor / neutral / good/ very good)

64) Does your centre have a graduate school?

yes
no
I don't know

65) Do you have access to a graduate school elsewhere (e.g. at a university or another centre/institute)?

yes
no
I don't know

66) Are you enrolled with the graduate school at your centre?

yes, without problems
yes, but my supervisor does not support it
no, because my supervisor does not support it
no, because I don't want to
no, for other reasons
I don't know

67) Are you enrolled with a graduate school elsewhere?

yes, without problems
yes, but my supervisor does not support it
no, because I am enrolled with the graduate school at my centre
no, because my supervisor does not support it
no, because I don't want to
no, for other reasons
I don't know

68) Do you think you would profit from having a graduate school?

yes

no
I don't know

69) Which of the listed items are offered to you?

financial support for conferences or travel (**offered by the graduate school / offered by another source / not offered**)

financial support for equipment (**offered by the graduate school / offered by another source / not offered**) financial support for publications (**offered by the graduate school / offered by another source / not offered**)

other financial support (**offered by the graduate school / offered by another source / not offered**)

soft skill courses (**offered by the graduate school / offered by another source / not offered**)

training programs (**offered by the graduate school / offered by another source / not offered**)

summer schools (**offered by the graduate school / offered by another source / not offered**)

informal get-together for doctoral researchers (**offered by the graduate school / offered by another source / not offered**)

retreats for doctoral researchers (**offered by the graduate school / offered by another source / not offered**)

career fair (**offered by the graduate school / offered by another source / not offered**)

conflict resolution (**offered by the graduate school / offered by another source / not offered**)

general advice (**offered by the graduate school / offered by another source / not offered**)

70) Would you use one or multiple of the listed items if offered?

financial support for conferences or travel (**yes / no**)

financial support for equipment (**yes / no**)

financial support for publications (**yes / no**)

other financial support (**yes / no**)

soft skill courses (**yes / no**)

training programs (**yes / no**)

summer schools (**yes / no**)

informal get-together for doctoral researchers (**yes / no**)

retreats for doctoral researchers (**yes / no**)

career fair (**yes / no**)

conflict resolution (**yes / no**)

general advice (**yes / no**)

71) On average, how many hours per month do you spend on graduate school activities?

0 hours

1-2 hours

3-4 hours

5-6 hours
7-8 hours
9-10 hours
11-12 hours
≥13 hours

72) Indicate your agreement with the following statement:

I generally benefit from my graduate school (completely disagree/disagree/neutral/agree/completely agree)

73) Indicate your agreement with the following statement:

My thesis directly benefits from my graduate school (completely disagree/disagree/neutral/agree/completely agree)

74) Does your centre have a contact person or contact point (e.g. welcome centre) for international people?

yes
no
I don't know

75) In what language do you communicate with your colleagues primarily?

English
German
another language

76) Is language an obstacle for communication with people at your centre? never almost never sometimes often very often

Is all the important information (e.g. group internal problems, administrative information) available in a language you understand?

yes
no, but my colleagues are helping me
no
don't know

77) Is all the important information (group internal problems, administrative information) available in a language you understand?

yes
no, but my colleagues are helping me
no
don't know

78) Does your centre support you in learning German?

yes no I don't know

my centre offers German courses
my centre offers monetary support for external courses
my centre permits attendance of courses during working hours

79) Are you currently taking German language classes?

yes, at my centre

yes, outside my centre

no

80) You indicate you are not currently taking German language classes, what is the main reason for this?

My level of German is sufficient

I am a native German speaker

I don't need to speak German

I don't have time to attend classes

The quality of classes available to me

Other, please specify

81) Do you feel integrated in your working group?

yes

no, because of language issues

no, for other reasons

prefer not to answer

82) Do you feel integrated at your centre?

yes

no, because of language issues

no, for other reasons

prefer not to answer

83) Do you have additional comments regarding the integration of international doctoral students and staff at your centre?**84) What are your two main wishes for your time as a doctoral researcher?**

#1

#2

85) What are major problems you experienced?**86) Would you recommend doing a doctoral research project at your centre to a friend?**

yes, to all my friends

yes, but only to German-speaking friends

yes, but only to non-German-speaking friends

yes, but with reservations

no, I would not

87) Do you have any comments on this survey or the survey questions?**88) Do you have any comments or suggestions for Helmholtz Juniors?**

By clicking "continue" you finally submit your answers.

Thank you very much for your participation in the 2017 Helmholtz Juniors Survey! We will analyze the results after the survey closes (on April, 16), and Helmholtz Juniors and your local PhD representatives will let you know about aggregated survey results as soon as they are available. For any questions regarding the survey, feel free to contact us via [email](#).

You can also find us on our [homepage](#), our [blog](#), our [twitter](#), our [facebook](#), or via the PhD representatives at your center. Your input is always welcome!

If you want to expand your network, broaden your horizons and meet people from diverse institutes of the Helmholtz Association, register for the [NextGen@Helmholtz Conference 2017](#) at GEOMAR in Kiel from July 5 to 7, 2017.

A.7. HeJu Statement on working conditions



Helmholtz Juniors

Helmholtz Juniors | Anna-Louisa-Karsch-Straße 2 | 10178 Berlin

An den Präsidenten der
Helmholtz-Gemeinschaft
Prof. Dr. Otmar D. Wiestler

Elias Eckert
Sprecher der Helmholtz Juniors
Deutsches Krebsforschungszentrum
Im Neuenheimer Feld 280
69120 Heidelberg
Tel +49 6221 56 38083
elias.eckert@dkfz.de

Heidelberg, den 04.08.2016

Stellungnahme der Helmholtz Juniors zu den Rahmenbedingungen für die Durchführung von Promotionsvorhaben in der Helmholtz-Gemeinschaft

Sehr geehrter Herr Prof. Dr. Wiestler,

von den rund 20.700 Wissenschaftlern an den 18 Helmholtz-Zentren stellen Doktorandinnen und Doktoranden nahezu ein Drittel und leisten somit einen essentiellen Beitrag zur Forschung an den Instituten. Die Helmholtz-Zentren bieten den Promovierenden ein wissenschaftlich höchst interessantes und attraktives Arbeitsumfeld, stehen dabei jedoch ständig im Rennen um die „besten Köpfe“ in Konkurrenz zu anderen Forschungsinstituten, Universitäten und Arbeitgebern aus der Industrie. Um qualifizierte und motivierte Hochschulabsolventen für eine Promotion innerhalb der Helmholtz-Gemeinschaft zu gewinnen und deren eigenständige und vor allem qualitativ hochwertige Forschungsarbeit zu gewährleisten, müssen den Promovierenden deshalb optimale und sichere Rahmenbedingungen geboten werden.

Mit den „Grundsätzen der Doktorandenvergütung“ vom 01.06.2010 wurde der Helmholtz-Gemeinschaft eine Grundlage gegeben, Promovierenden angemessene Arbeitsverträge anzubieten. Das Ziel, Doktorandinnen und Doktoranden eine Promotion im Rahmen einer sozialversicherungspflichtigen Stelle zu ermöglichen, wurde zudem in den „Leitlinien zur Durchführung von Promotionsvorhaben in der Helmholtz-Gemeinschaft“ (März 2015) klar formuliert.

In dieser Stellungnahme möchten wir auf einige Kernelemente der Arbeitsbedingungen von Promovierenden eingehen und Problemfelder aufzeigen. Wir stützen uns hierbei im Besonderen auf die durch die Helmholtz Juniors an allen Zentren durchgeführte Umfrage aus dem Jahre 2014 [1]. Die Nachwuchswissenschaftler werden in der umfangreichen und alle zwei Jahre stattfindenden Umfrage zu den für sie wichtigsten Themenfeldern befragt, um dadurch Indikatoren für ihre Bedürfnisse und mögliche Missstände zu erhalten. Anhand dieser Daten sollen langfristig Verbesserungen der Promotionsbedingungen an den Helmholtz-Zentren angestoßen werden.

Die Kernergebnisse der Umfrage sind einerseits eine hohe Zufriedenheit der Doktorandinnen und Doktoranden mit dem wissenschaftlichen und infrastrukturellen Umfeld in den Helmholtz-Zentren [1; S. 36ff], sowie andererseits ein bestehender Handlungsbedarf bei der Vertragsgestaltung und den Arbeitsbedingungen. Im Folgenden möchten wir uns besonders mit diesen beiden letzteren Spannungsfeldern genauer beschäftigen.

Einige der benannten Probleme sind selbstverständlich von zentrums-spezifischer Natur. Uns ist es jedoch ein zentrales Anliegen hohe Standards für alle Zentren gleichermaßen zu setzen, um die Marke „Helmholtz“ als Qualitätssiegel für Promotionsinteressierte weiter zu stärken.

Vertragliche Bindung von Doktorandinnen und Doktoranden

Damit in der Wissenschaft hervorragende Leistungen erzielt werden können ist eine klare zeitliche, vertraglich gesicherte Perspektive notwendig. Gegenwärtig gibt es innerhalb der Helmholtz-Gemeinschaft eine Vielzahl an unterschiedlichen Vertragsmodellen, die sich zum Teil auch innerhalb der Zentren, selbst in gleichen Fachgebieten, stark unterscheiden. Grundsätzlich sind hierbei drei Finanzierungsmodelle zu benennen: zentrums-interne Stipendien (ca. 22 % aller Finanzierungsmodelle), Anstellungen nach Tarif des öffentlichen Dienstes (TVöD, 9 %) und daran orientierte Doktorandenverträge (42 %) [1; S. 9ff; 2; 3].

Insbesondere zentrumsinterne Stipendien sehen wir in vielerlei Hinsicht als sehr problematisch an. Den Doktorandinnen und Doktoranden entstehen mit diesem Vertragsmodell im Allgemeinen entscheidende Nachteile:

- **Finanzielle Benachteiligung:** Nach Abzug von Versicherungsbeiträgen bleibt Stipendiatinnen und Stipendiaten im Mittel ein Nettoeinkommen von ca. 950 €. Im Vergleich zu einem Nettoeinkommen eines Promovierenden mit TVöD Vertrag von durchschnittlich 1400 € [1; S. 9, S. 13ff] stellt dies eine nicht hinnehmbare finanzielle Benachteiligung dar. Darüber hinaus sind Stipendiaten i.d.R. von zusätzlichen Einmalzahlungen wie beispielsweise dem Weihnachtsgeld sowie der fortschreitenden Eingruppierung in steigende Gehalts- und Erfahrungsstufen ausgenommen.
- **Fehlen des gesetzlich geregelten Mindestanspruchs auf bezahlten Urlaub:** Im Vergleich sichert der TVöD Bund Arbeitnehmern 30 Tage jährlichen Urlaubsanspruch zu [1; S. 10ff; 2 Abschnitt IV Urlaub und Arbeitsbefreiung S. 41ff].
- **Fehlender vertraglich geregelter Versicherungsschutz:** Sowohl der Arbeitsschutz als auch der Unfallversicherungsschutz auf dem Arbeitsweg sind nicht eindeutig geregelt.
- **Mangelnde soziale Absicherung:** Stipendiatinnen und Stipendiaten sind nach Auslaufen des Stipendiums nicht über die gesetzliche Arbeitslosenversicherung abgesichert. Krankenversicherungsbeiträge müssen von Doktorandinnen und Doktoranden gesondert entrichtet werden und werden von Stipendiumsgebern in der Kompensation nicht immer vollständig berücksichtigt. Zu beachten sind zudem Einbußen in der gesetzlichen/privaten Rentenversicherung durch fehlende Beitragsjahre.
- **Fehlende Regelungen bei Ausfall:** Bei Nichtanrechnung der Elternzeit oder bei Ausfall in Folge einer schweren Erkrankung verkürzt sich die Laufzeit des Stipendiums in einigen Fällen [2; siehe Abschnitt IV Urlaub und Arbeitsbefreiung S. 41ff].
- **Fehlender Mitarbeiterstatus:** Stipendiatinnen und Stipendiaten zählen i.d.R. formal nicht als Mitarbeiter der jeweiligen Helmholtz-Institute und sind oftmals nicht stimmberechtigt in Gremien. Sie haben teilweise nur begrenzten Zugriff auf Ressourcen des jeweiligen Helmholtz-Zentrums (z.B. Pflege oder Kinderbetreuung).

Als Helmholtz-Juniors plädieren wir für den umfassenden und klaren Verzicht der Helmholtz-Gemeinschaft auf die Vergabe interner Promotionsstipendien zugunsten sozialversicherungspflichtiger Promotionsstellen.

Mit diesem in den „Leitlinien zur Durchführung von Promotionsvorhaben in der Helmholtz-Gemeinschaft“ angedachten Schritt würde die größte wissenschaftliche Gemeinschaft Deutschlands ein Zeichen für die Verbesserung einer überholten wissenschaftlich-akademischen Arbeitspolitik setzen. Ein solches Zeichen hat die

Max-Planck-Gemeinschaft bereits im März 2015 mit der grundlegenden Reform ihrer Nachwuchsförderung gesetzt.

In Bezug auf die Vertragsbindung von Promovierenden ist es ebenfalls wichtig hervorzuheben, dass die Promotionsvorhaben selbst untrennbar mit der Arbeit an den Instituten verknüpft sind. Promovierende bearbeiten in der Regel öffentlich- und/oder privat-finanzierte Projekte. Ein Fortschritt im Promotionsvorhaben ist somit gleichbedeutend mit Projektfortschritt, der für die Mittelgewinnung der Helmholtz-Zentren notwendig ist. Die gedankliche und vertragliche Trennung von kompensationswürdiger Institutsarbeit und privater Promotion widerspricht dem Arbeitsalltag in den Zentren.

Um dies anzuerkennen, Projektmittel effizienter einzusetzen und zum Gelingen der Promotionsvorhaben beizutragen treten wir daher für die vertragliche Festlegung folgender zentraler Punkte ein:

- **die Promotion als übergeordnetes Vertragsziel**, d.h. die Arbeitszeit steht primär für die Promotion und die dafür notwendigen Kurse, Weiterbildungen, Veranstaltungen und akademische Verpflichtungen zur Erlangung des Doktorgrades zur Verfügung;
- **eine an die Projekte angepasste Vertragsdauer**, welche auch die Zeit der Niederschrift der Dissertation umfassen muss. Momentan sind beispielsweise die geltenden Vertragslaufzeiten auf 3 Jahre limitiert, jedoch beträgt die alleinige Projektdauer ohne Dissertationsniederschrift in über 55% der Fälle bereits mindestens 4 Jahre oder länger [1; S. 12ff];
- **eine klare Regelung der Betreuungsvereinbarung**, u.a. mit Betreuungszusage, Projektplan und die Zuteilung eines Mentors. Der Projekt- und Promotionsfortschritt sollte regelmäßig von neutralen dritten Parteien evaluiert werden [1; S. 16ff];
- **die Förderung der Teilnahme an einer Graduiertenschule** beziehungsweise qualifizierenden Kursen. Es ist beispielsweise einigen Promovierenden nicht möglich an Graduiertenschulen oder Weiterbildungskursen teilzunehmen [1; S. 22ff].

Die vertragliche Niederschrift der Rahmenbedingungen zur Bearbeitung der Promotionsprojekte ist essentiell, um den Promovierenden die Fokussierung auf ihr Promotionsvorhaben und deren Abschluss in einem angemessenen zeitlichen und qualitativen Rahmen zu ermöglichen. Diese zentralen Vorgaben sollten innerhalb der Helmholtz-Gemeinschaft für alle Promovierenden lückenlos zum Standard werden.

Ausgestaltung der Arbeitsbedingungen von Promovierenden

Neben der Art der vertraglichen Bindung von Doktorandinnen und Doktoranden zeigt sich in der Umfrage der Helmholtz Juniors auch inhaltlich Verbesserungsbedarf. Dies betrifft insbesondere den Urlaubsanspruch und die Vergütungshöhe.

Die zu recht gestellten hohen Anforderungen an die wissenschaftliche Arbeit bedürfen eines angemessenen Ausgleichs, um Produktivität und Kreativität zu erhalten und um krankheitsbedingtem Ausfall vorzubeugen. Der TVöD trägt diesem mit 30 Urlaubstagen pro Jahr und Überstundenabbau Rechnung. Im Gegensatz dazu sehen die meisten Doktorandenverträge jedoch nur 20 Urlaubstage und bei einer regelmäßigen Arbeitszeit von mehr als 40 Stunden pro Woche [1; S. 11ff; Bild 2.6] keinen Überstundenabbau vor. Darüber hinaus sind besonders Promovierende mit Kindern (z.B. während der Schulferien) stark auf diesen Urlaubsanspruch angewiesen. Die Anzahl der Urlaubstage sind auch ein wichtiges Wettbewerbsargument zur Gewinnung internationaler Promovierender, die den Jahresurlaub oft am Stück nehmen um ihre Familien zu besuchen. Die

derzeitig vorherrschende Praxis widerspricht somit dem Ziel den Wissenschaftsstandort Deutschland zu stärken.


Ein weiterer zentraler Punkt ist die große Heterogenität unter den Promovierenden bezüglich der Höhe der Vergütung. Die Spanne beginnt hierbei im Falle einiger Stipendiatinnen und Stipendiaten bei einem „Nettogehalt“ (abzüglich der Kranken- und Pflegeversicherung) von 929 € monatlich [1; Tabelle 2.1, S. 14] und endet bei über 1900 € (4,9 % der Befragten mit sozialversicherungspflichtiger Anstellung) [1; S. 13ff und S. 15]. Diese große Bandbreite ist selbstverständlich auch vorherrschender Diskrepanzen in der Bezahlung von Wissenschaftlern aus unterschiedlichen Disziplinen und mit unterschiedlichen Fachkenntnissen geschuldet. Dennoch liegt das Nettogehalt von 35 % der Doktorandinnen und Doktoranden mit sozialversicherungspflichtiger Anstellung bei unter 1500 €, was finanziell einer Bezahlung von weniger als TVöD E13 65 % entspricht. Eine Entlohnung von TVöD E13 65 % sehen wir als die Untergrenze für die Bezahlung eines Nachwuchswissenschaftlers an einer exzellenten Forschungseinrichtung an. Dabei orientieren wir uns auch an den Empfehlungen der Deutschen Forschungsgemeinschaft [2; 3; 4].

Abschließende Bemerkungen

In einer erstklassigen wissenschaftlichen Gemeinschaft, die so stark von den Forschungsleistungen Einzelner abhängt, dürfen die bestehenden Vorgaben für die Rahmenbedingungen für Promovierende nicht zu einem Standortnachteil werden. Es ist notwendig, dass bei der Beschäftigung von Promovierenden auf Qualität gesetzt wird und hervorragende Absolventen mit sehr guten Arbeits- und Promotionsbedingungen unterstützt werden.

Zusammenfassend befürworten die Helmholtz Juniors eine Anstellung von Promovierenden gemäß eines Tarifvertrages des öffentlichen Dienstes TVöD bzw. TV-L mit einer promotionsspezifischen Zusatzvereinbarung für die gesamte Dauer der Durchführung des Promotionsvorhabens.

Unsere zentralen Forderungen für alle Doktorandinnen und Doktoranden auf einen Blick:



- Abschaffung der Stipendien im Regelfall
- Mindestentgelt 65% TVöD E13 mit 30 Tagen Urlaubsanspruch
- Vertragsdauer mind. 3 Jahre
- Promotionsvorhaben als übergeordnetes Vertragsziel

Die Helmholtz Juniors sind stolz darauf ein Teil dieser exzellenten Forschungsgemeinschaft zu sein. Darum ist es uns besonders daran gelegen, dass die Helmholtz-Gesellschaft auch in Zukunft ein attraktiver Arbeitgeber für die fähigsten Nachwuchswissenschaftler auf nationaler und internationaler Ebene bleibt. Wir sehen es demnach als unumgänglich an, allen Promovierenden innerhalb der Gemeinschaft ein gleichwertiges hohes Niveau in der Art der Anstellung zu ermöglichen.

Wir würden uns freuen, wenn die Helmholtz-Gemeinschaft als führende und größte Forschungsgemeinschaft der Bundesrepublik mit den Reformen zu den Arbeits- und Vertragsverhältnissen der Promovierenden als gutes Vorbild vorangeht – ganz im Sinne des Wissenschaftsstandortes Deutschland.

Gerne treten wir zu dieser Thematik als Helmholtz Juniors und als lokale Doktorandenvertretungen in den Dialog mit der Helmholtz-Gemeinschaft und den Zentren.

Hochachtungsvoll
Ihre Helmholtz Juniors



Dagmara Rusiecka



Elias Eckert

Sprecher der Helmholtz Juniors

Referenzen

- [1] Helmholtz Juniors PhD Umfrage Stand 2014 (Anlage 1). <http://www.heju-survey.de/results.html>, Stand 1. August 2016.
- [2] Tarifverhandlungen über die Entgeltordnung zum TVöD/Die Entgeltordnung TVöD Bund, Stand 2014; entnommen der Homepage des Bundesministeriums des Inneren der Bundesrepublik Deutschland bmi.bund.de, Stand 1. August 2016.
- [3] Tarifvertragliches Leistungsentgelt/Tarifvertrag für den öffentlichen Dienst (TVöD; Stand 1. März 2015); speziell S.65ff Anlage A Tabellenentgelt TVöD Bund stand 1. März 2015; entnommen der Homepage des Bundesministeriums des Inneren der Bundesrepublik Deutschland, bmi.bund.de, Stand 1. August 2016.
- [4] Hinweis zur Bezahlung von Promovierenden, DFG-Vordruck 55.02 – 10/11 http://www.dfg.de/formulare/55_02/55_02_de.pdf, Stand 1. August 2016

Anlagen

- [1] Bericht des Helmholtz Juniors Surveys

