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Survey on the Labour Market Position of PhD Graduates: Development of a Novel Questionnaire

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Cathelijn J. F. Waaijer¹, Rosalie Belder², Cornelis A. van Bochove¹, Hans Sonneveld^{3,4} and Inge C. M. van der Weijden¹

1. Centre for Science and Technologies Studies. Faculty of Social and Behavioural Sciences, Leiden University, P.O. Box 905, Leiden, 2300 AX, The Netherlands

2. Science System Assessment Department, Rathenau Instituut, The Hague, The Netherlands

3. Netherlands Centre for Graduate and Research Schools, Utrecht, The Netherlands

4. Tilburg Law School, Tilburg University, Tilburg, The Netherlands

1. Introduction

Upon obtaining a PhD, graduates are confronted by the question what job to find next. Stay in academia or find employment elsewhere? For many academia is the preferred sector of employment (de Goede, Belder & de Jonge 2014; Sauermann & Roach 2012). At the same time the career opportunities within academia are insecure, and characterized by mainly temporary contracts and only few available permanent faculty positions. In addition, working in academia is perceived as highly competitive. Scientists are pushed to publish scholarly papers and to apply for external research grants (van Arensbergen 2014). Competition is becoming even stronger due to the increasing number of PhD graduations. In the Netherlands, the number of PhD graduations per year has grown from 2,360 in 2000 to almost 4,500 in 2013 (Vereniging van Nederlandse Universiteiten 2014). Recent studies show that less than thirty per cent of all PhD holders in the Netherlands work in higher education (Auriol, Misu & Freeman 2013; De Goede, Belder & De Jonge), which is quite comparable to PhDs in other countries such as US (25%; Stephan 2012) and Belgium (31%; Boosten et al. 2014).

Our study contributes to our knowledge about career development of PhD holders. We surveyed PhD holders five years after obtaining a PhD from a Dutch university. They were asked about labour market position, job choice, perception of career prospects, use of skills developed during PhD, mentoring experiences, and the value of the PhD degree.

2. Methods

Construction of the questionnaire

We developed a questionnaire to collect information on a wide range of employment aspects of PhD graduates, such as employment characteristics, job satisfaction, job choice, perception of career prospects, use of skills developed during PhD, and mentoring experiences. The

questionnaire consisted of mainly close-ended as well as a small number of open-ended questions. Survey questions on the current employment status of PhDs were drawn from the Household Questionnaire of the 2011 UK Census (Office for National Statistics 2011). Several items on job satisfaction were drawn from the Careers of Doctorate Survey model questionnaire (Auriol, Felix & Schaaper 2010). The survey was pretested among seventeen PhD holders not included in the survey sample. The final version of the questionnaire was constructed using their comments and suggestions. The questionnaire can be found as an appendix to this working paper.

Survey sample

The survey sample was drawn from two sources. The first was the survey sample of the 2008 Netherlands Survey of Doctorate Recipients (Sonneveld, Yerkes & Van de Schoot 2010). This survey was sent to close to 1,100 individuals who had registered for a PhD defense taking place between April 2008 and March 2009 at four universities in The Netherlands: Utrecht University (a large, broad research university), Delft University of Technology (a university of technology), Wageningen University (a university historically focused on agriculture but now broadening its scope to life sciences and environmental research), and Erasmus University Rotterdam (focused on medicine and social sciences, especially economics and management). The second source of PhD graduates were all individuals who obtained their PhD at Leiden University (a large, broad research university also located in the Netherlands) between January 2008 and May 2012: a total of 1,319 PhD graduates. Combined with the sample from the other four universities, this amounted to a total of 2,410 PhD's.

For these 2,410 PhD graduates on-line searches were conducted using standard search engines, Web of Science and Pubmed to find their current email address or LinkedIn profile (Waijjer 2014). The email addresses were used to send an invitation and personal link to our web survey. If only a LinkedIn profile of the PhD graduate was found, we sent an invitation to "link" on this website. If a PhD graduate accepted this invitation, the actual survey invitation was sent. For a total of 1,823 PhD's an email was delivered and 370 were invited through LinkedIn and other similar channels, which resulted in a survey sample of 2,193 PhD graduates. The survey remained open for almost three months: from 23 October 2013 until 21 January 2014. We used the tailored design method to maximize the response rate (Dillman 2009). During this period a total of three reminders was sent to potential respondents who had not visited the survey or not completed it.

In addition, for all PhDs in the survey set (the survey set of 2,410) we looked up their dissertation in online repositories. Dissertations from Dutch universities typically include a title page with the date of the PhD defense, the place of birth and often the date of birth of the PhD candidate. We also recorded the gender of the PhD. This enabled us to do a non-response analysis.

3. Descriptive statistics

Response rate

In total 1,133 PhD graduates started our survey, resulting in a (partial) response rate of 51.7%. Of those, 960 progressed to the final question, resulting in completed response rate of 43.8%.

Descriptive statistics on the PhD

PhD characteristics were very comparable between the 1,133 responses to the survey and the complete survey set of 2,410 PhDs, indicating no bias in survey response with regards to these characteristics (Table 1). Most respondents received their PhD in 2008, followed by the other years. Most respondents received their PhD from Leiden University (56%), with the other universities making up seven to seventeen per cent of the respondent sample. The research areas of the PhD graduates were medical and health sciences (34%), natural sciences (26%), social sciences (17%), humanities (13%), and engineering & technology (11%).

Descriptive statistics on the demographic background

The demographic background of PhDs who responded to our survey compared to the complete survey set was similar for gender and age at PhD, which indicates our respondents form a good sample of the complete population (Table 2). Overall, 55% of the respondents were male. Most respondents were between 26 and 30 years of age when they received their PhD.

On the other hand, more than eighty per cent of the respondents indicated they held the Dutch nationality, but only 64 per cent of the complete set was born in the Netherlands. Although nationality and country of birth cannot be equated, the imbalance does indicate an overrepresentation of Dutch nationals among the respondents. Over sixty per cent of the respondents were married or in a registered partnership¹, and close to sixty per cent had children.

4. Future research

The first results of this study were presented at the “*Science and Technology Indicators Conference*” in Leiden (4 September 2014), during the “*VSNU-café: De Academische Loopbaan van de Toekomst*” in The Hague (14 October 2014) and at the “*Premier Colloque Interdisciplinaire sur le Doctorat*” in Paris (15 December 2014). More results from the study are expected in 2015.

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¹ Under Dutch law, these two types of commitment are very similar legally, so we combined the two into a single answer category.

Table 1. PhD characteristics of respondents (1,133 PhDs) and survey set (2,410 PhDs)

PhD characteristics	% of respondents	% survey set
<i>Year of PhD</i>		
2008	49	49
2009	21	22
2010	13	14
2011	12	12
2012	5	4
<i>City of PhD</i>		
Delft	10	10
Leiden	56	55
Rotterdam	10	11
Utrecht	17	17
Wageningen	7	7
<i>Field of PhD</i>		
Medical and health sciences	34	N/A
Natural sciences	26	N/A
Social sciences	17	N/A
Humanities	13	N/A
Engineering and technology	11	N/A

Table 2. Personal characteristics of respondents (1,133 PhDs) and survey set (2,410)^a

Personal characteristics	% of respondents	% survey set
<i>Gender</i>		
Male	55	56
Female	45	44
<i>Nationality/country of birth</i>		
	<i>(Nationality)</i>	<i>(Country of birth)</i>
Dutch/born in the Netherlands	83	64
Non-Dutch/born outside the Netherlands	19	36
<i>Age at PhD</i>		
<26	<1	<1
26-30	38	35
31-35	36	36
36-40	11	13
41-45	7	6
46-50	3	4
>50	6	6
<i>Marital status</i>		
Married or in a registered partnership	64	N/A
Partner, but not married or in a registered partnership	23	N/A
Single	11	N/A
Other	1	N/A
<i>Children</i>		
Yes	57	N/A
No	43	N/A

^aIn the survey, the respondents were asked to list their nationality. More than one nationality possible. For the non-response analysis, we used country of birth as a proxy of nationality.

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QUESTIONNAIRE

A. Personal characteristics

We would first like to ask you three short personal questions.

1. What is your year of birth?

....

2. What is your nationality? (more than one nationality possible)

- Dutch
- Other, please specify

3. Are you:

- male?
- female?

B. Current employment situation

1. Last week, were you:

Tick all that apply

Include any paid work, including casual and temporary work, even if only for one hour

- working as an employee? **GO TO B6**
- self-employed or freelance? **GO TO B6**
- working paid or unpaid for your own or family's business? **GO TO B6**
- away from work ill, on maternity leave or temporarily laid off? **GO TO B6**
- doing any other kind of paid work? **GO TO B6**
- none of the above

2. Were you actively looking for any kind of paid work during the last four weeks?

- Yes
- No

3. Last week, were you waiting to start a job already obtained?

- Yes
- No

4. Last week, were you:

Tick all that apply

- retired (whether receiving a pension or not)?

- a student?
 - looking after home or family?
 - long-term sick or disabled?
 - other?
5. Have you ever performed paid work?
- Yes, write in the year that you last worked
.... **GO TO B25**
 - No **GO TO B43**
6. Do you still have the same job as during your PhD? *Same job refers to the same tasks within the same organizational unit. The job contract can be different.*
- Yes **GO TO B8**
 - No **GO TO B7**
7. Between PhD and your current job, did you have one or more other jobs? *Defined as other work within another organizational unit of your organization or working in a different organization. Subsequent contracts for the same work in the same part of your organization are not 'another job'.*
- Yes
 - No

Please answer the remaining questions for your main job

Your main job is the job in which you usually work the most hours in

8. How long have you been in your job?
..... Years
9. What is the education level normally required for your job?
- Bachelor or lower qualification level
 - Master level
 - PhD level
 - Professional degree level (e.g., medical degree [Dutch: *artsexamen*])
10. In your main job, are you:
- an employee?
 - self-employed or freelance without employees? **GO TO B16**
 - self-employed with employees? **GO TO B16**

11. Do you supervise any employees?

- Yes
- No

12. According to your job contract, are you working:

- Full-time **GO TO B14**
- Part-time

13. Which percentage of a full-time position does your position consist of according to your job contract?

..%

14. Do you have a:

- Permanent job contract **GO TO B16**
- Temporary job contract

15. Have you been promised a permanent job contract when satisfactorily fulfilling your job?

- Yes, via a probation period
- Yes, via a tenure track
- No

16. Are you working in the Netherlands or outside the Netherlands? (*if working both in the Netherlands and abroad, please choose the option where you spend the most time*)

- In the Netherlands *IF B10 Is 'an employee'* **GO TO B17 ELSE GO TO B19**
- Outside the Netherlands *IF B10 Is 'an employee'* **GO TO B18 ELSE GO TO B19**

17. Which description best fits your employer?

Research and higher education sector

- A university
- A university-affiliated hospital or medical centre
- A research institute
- A higher vocational college (Dutch: *HBO*)

Government sector

- National, provincial or local government
- European Union

Private sector

- A private business with research & development (R&D)
- A private business without R&D
- A not-for-profit organization

Other

- Please specify, ...

18. Which description best fits your employer?

Research and higher education sector

- A university
- A university-affiliated hospital or medical centre
- A research institute
- A college

Government sector

- National, state/provincial or local government
- European Union

Private sector

- A private business with research & development (R&D)
- A private business without R&D
- A not-for-profit organization

Other

- Please specify, ...

19. In your job, are you involved in basic research?

(OECD definition: experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view)

- Yes
- No

20. In your job, are you involved in applied research?

(OECD definition: original investigation undertaken in order to acquire new knowledge, but directed primarily towards a specific practical aim or objective)

- Yes
- No

21. In your job, are you involved in experimental development?

(OECD definition: systematic work, drawing on knowledge gained from research and practical experience, that is directed to producing new materials, products and devices; to installing new processes, systems and services; or to improving substantially those already produced or installed)

- Yes
- No

If B19 Is 'Yes' OR B20 Is 'Yes' GO TO B22; ELSE GO TO B23

22. What is the main purpose of your research?

- Publishing of articles and/or books
- Practical application
- Both
- None

23. What is your full and specific job title?

For example, ASSISTANT PROFESSOR, JUNIOR RESEARCHER, POLICY ADVISER, PATENT LAWYER

Please write down in Dutch if you are unsure of your job title in English

.....

24. Briefly describe what you do in your main job.

.....

25. After your PhD, have you had one or more jobs? (*ISIZ: hier verplichten een antwoord te geven*)

Defined as other work in a different part of your organization or working in a different organization. Subsequent contracts for the same work in the same part of your organization are not 'another job'.

- Yes ***GO TO B26***
- No ***GO TO B43***

Please answer the remaining questions for your last main job

Your main job is the job in which you usually worked the most hours in

26. How long have you performed paid work after your PhD?

..... years

27. What was the education level normally required for your job?

- Bachelor or lower qualification level
- Master level
- PhD level
- Professional degree level (e.g., medical degree [Dutch: *artsexamen*])

28. In your main job, were you:

- an employee?
- self-employed or freelance without employees? **GO TO B34**
- self-employed with employees? **GO TO B34**

29. Did you supervise any employees?

- Yes
- No

30. According to your job contract, were you working:

- Full-time **GO TO B32**
- Part-time

31. Which percentage of a full-time position did your position consist of according to your job contract?

..%

32. Did you have a:

- Permanent job contract **GO TO B34**
- Temporary job contract

33. Have you been promised a permanent job contract when satisfactorily fulfilling your job?

- Yes, via a probation period
- Yes, via a tenure track
- No

34. Were you working in the Netherlands or outside the Netherlands? (*if working both in the Netherlands and abroad, please choose the option where you spent the most time*)

- In the Netherlands *IF B28 Is 'an employee'* **GO TO B35 ELSE GO TO B37**
- Outside the Netherlands *IF B28 Is 'an employee'* **GO TO B36 ELSE GO TO B37**

35. Which description best fits your last employer?

Research and higher education sector

- A university
- A university-affiliated hospital or medical centre
- A research institute
- A higher vocational college (Dutch: *HBO*)

Government sector

- National, provincial or local government
- European Union

Private sector

- A private business with research & development (R&D)
- A private business without R&D
- A not-for-profit organization

Other

- Please specify, ...

36. Which description best fits your last employer?

Research and higher education sector

- A university
- A university-affiliated hospital or medical centre
- A research institute
- A college

Government sector

- National, state/provincial or local government
- European Union

Private sector

- A private business with research & development (R&D)
- A private business without R&D
- A not-for-profit organization

Other

- Please specify, ...

37. In your job, were you involved in basic research? (OECD definition: experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying

foundations of phenomena and observable facts, without any particular application or use in view)

- Yes
- No

38. In your job, were you involved in applied research? (OECD definition: original investigation undertaken in order to acquire new knowledge, but directed primarily towards a specific practical aim or objective)

- Yes
- No

39. In your job, were you involved in experimental development? (OECD definition: systematic work, drawing on knowledge gained from research and practical experience, that is directed to producing new materials, products and devices; to installing new processes, systems and services; or to improving substantially those already produced or installed)

- Yes
- No

If B37 Is 'Yes' OR B38 Is 'Yes' GO TO B40; ELSE GO TO B41

40. What was the main purpose of your research?

- Publishing of articles and/or books
- Practical application
- Both
- None

41. What was your full and specific job title?

For example, ASSISTANT PROFESSOR, JUNIOR RESEARCHER, POLICY ADVISER, PATENT LAWYER

Please write down in Dutch if you are unsure of your job title in English

.....

42. Briefly describe what you did in your main job.

.....

43. In which field did you conduct your PhD research?

- Medical and health sciences
- Natural sciences (excluding agricultural sciences)

- Agricultural sciences
- Social sciences
- Humanities
- Engineering and technology

C. Accomplishments

1. Did you receive your PhD with distinction (Dutch: *cum laude* or *magna cum laude*)?
 - Yes
 - No

Please indicate whether you agree with the following statement.

2. My scientific oeuvre is good enough to build an academic research career on.

By academic we mean: in universities, university medical centres, affiliated institutes, and institutes of the Royal Academy of Sciences and the Netherlands Organisation for Scientific Research (Dutch: NWO); and similar organizations abroad.

- Yes, more than good enough
- Yes, good enough
- Not sure
- No

3. Have you ever received an individual research grant? (*multiple answers possible*)

- Yes, a personal research grant from the Netherlands Organisation for Scientific Research (Dutch: *NWO*)
- Yes, a personal research grant from the European Research Council (ERC)
- Yes, a personal research grant from private charities (e.g., Dutch Cancer Society [Dutch: *KWF*], Dutch Heart Foundation [Dutch: *Hartstichting*], Bill & Melinda Gates Foundation)
- Yes, another type of individual funding, please specify
- No

IF B5 is 'No' OR IF B25 is 'No' GO TO E5; IF B6 is 'Yes' OR B7 is 'No' GO TO D2; ELSE GO TO D1

D. Reasons for choosing current job

Voor ISIZ en onszelf: deze vraag krijgen de respondenten die ofwel tussen hun promotie en huidige baan een of meer andere banen hebben gehad, en de respondenten die nu niet werken maar wel een of meerdere banen na hun promotie hebben gehad.

1. Your previous job: Did you leave it because your contract was not renewed/was terminated, or the company you owned ceased to exist?

- Yes
- No

IF B1 is 'none of the above' GO TO D5; ELSE GO TO D2

Please indicate to what extent you agree with the following statement.

2. When I chose my current job there were sufficient job opportunities in my preferred sector of work.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate whether you agree with the following statement.

3. My current job was my first job choice.

- Yes
- No
- Don't know

Please indicate to what extent you agree with the following statement.

4. I would have preferred to take another job if circumstances had been different.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

IF B6 is 'Yes' OR B7 is 'No' GO TO D6; ELSE GO TO D5

5. Your previous job: please indicate how you feel about the following aspects of it.

a. Related to intellectual development

	Too much	About right	Too little
i. Creativeness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii. Intellectual challenge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii. Level of responsibility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv. Degree of independence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

v.	Workload	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
		Much	Moderate	Little or none
vi.	Infringement on personal life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
		Large	Moderate	Small or none
vii.	Possibility to develop new skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
viii.	Contribution to society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
		Good	Neutral	Bad
ix.	Social status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Your previous job: please indicate how you feel about the following aspects of it.

b. Related to terms of employment

		Good	Neutral	Bad
i.	Salary	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii.	Benefits (examples: group insurance, disability income protection, retirement benefits, daycare, tuition reimbursement, sick leave, vacation, social security, profit sharing, funding of education, housing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii.	Job security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv.	Availability of permanent jobs within organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
v.	Job opportunities within organization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vi.	Organization's career policy and human resource management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vii.	Degree to which job provided opportunities for career advancement (also outside the organization)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Long	Moderate	Short
viii. Travelling distance from home to job	o	o	o
	Much	Moderate	Little or none
ix. Adverse personal and family-related circumstances in relation to job (e.g., partner working far away)	o	o	o

IF B1 is 'none of the above' GO TO E3; ELSE GO TO D6

6. Your current job: please tick which of these factors played a role in your choice for your current job.

a. Related to intellectual development

	Played a role <i>Tick if yes</i>
i. Creativeness	<input type="checkbox"/>
ii. Intellectual challenge	<input type="checkbox"/>
iii. Level of responsibility	<input type="checkbox"/>
iv. Degree of independence	<input type="checkbox"/>
v. Workload	<input type="checkbox"/>
vi. Infringement on personal life	<input type="checkbox"/>
vii. Possibility to develop new skills	<input type="checkbox"/>
viii. Contribution to society	<input type="checkbox"/>
ix. Social status	<input type="checkbox"/>

6. Your current job: please tick which of these factors played a role in your choice for your current job.

b. Related to terms of employment

Played a role

		<i>Tick if yes</i>
i.	Salary	<input type="checkbox"/>
ii.	Benefits (examples: group insurance, disability income protection, retirement benefits, daycare, tuition reimbursement, sick leave, vacation, social security, profit sharing, funding of education, housing)	<input type="checkbox"/>
iii.	Job security	<input type="checkbox"/>
iv.	Availability of permanent jobs within organization	<input type="checkbox"/>
v.	Job opportunities within organization	<input type="checkbox"/>
vi.	Organization's career policy and human resource management	<input type="checkbox"/>
vii.	Degree to which job provides opportunities for career advancement (also outside the organization)	<input type="checkbox"/>
viii.	Travelling distance from home to job	<input type="checkbox"/>
ix.	Personal and family-related circumstances in relation to job (e.g., partner working far away)	<input type="checkbox"/>

7. Please indicate whether you expected these factors to increase or decrease when choosing your current job.

		Expected an increase	Expected no change	Expected a decrease
i.	x	o	o	o
ii.	x	o	o	o
iii.	x	o	o	o
iv.	x	o	o	o

8. Your current job: how satisfied are you with the following aspects in your current job?

a. Related to intellectual development

		Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied
i.	Creativeness	o	o	o	o	o
ii.	Intellectual challenge	o	o	o	o	o
iii.	Level of responsibility	o	o	o	o	o
iv.	Degree of independence	o	o	o	o	o

v.	Workload	o	o	o	o	o
vi.	Infringement on personal life	o	o	o	o	o
vii.	Possibility to develop new skills	o	o	o	o	o
viii.	Contribution to society	o	o	o	o	o
ix.	Social status	o	o	o	o	o

8. Your current job: how satisfied are you with the following aspects in your current job?

b. Related to terms of employment

	Very satisfied	Satisfied	Neutral	Dissatisf ied	Very dissatisfie d
i. Salary	o	o	o	o	o
ii. Benefits (examples: group insurance, disability income protection, retirement benefits, daycare, tuition reimbursement, sick leave, vacation, social security, profit sharing, funding of education, housing)	o	o	o	o	o
iii. Job security	o	o	o	o	o
iv. Availability of permanent jobs within organization	o	o	o	o	o
v. Job opportunities within organization	o	o	o	o	o
vi. Organization's career policy and human resource management	o	o	o	o	o
vii. Degree to which job provides opportunities for career advancement (also outside the organization)	o	o	o	o	o
viii. Travelling distance from home to job	o	o	o	o	o
ix. Personal and family-related circumstances in relation to job (e.g., partner working far away)	o	o	o	o	o

9. To what extent have the following long-term career aspects in academic R&D influenced the choice for your current job?

By academic R&D we mean R&D in universities, university medical centres, affiliated institutes, and institutes of the Royal Academy of Sciences and the Netherlands Organisation for Scientific Research (Dutch: NWO); and similar organizations abroad.

	Very strongly	Strongly	Moderately	A little	Not at all
i. Long-term career perspectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii. Availability of permanent positions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii. Usual length of period holding a temporary position	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv. Quality of HRM/career policy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. It is often stated that national and international mobility are necessary for a career in academic R&D. Do you agree with this statement that this is necessary?

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

IF D10 Is 'Strongly Agree' OR 'Agree' GO TO D11; ELSE GO TO D12

11. To what extent has this required national and international mobility made you hesitate to choose a job in academic R&D?

- Very much
- Much
- Moderately
- A little
- Not at all

12. To what extent have the following aspects related to academic R&D made you hesitate to choose a job in academic R&D?

	Very much	Much	Moderately	A little	Not at all
i. Pressure to publish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- ii. Pressure to obtain grants

13. Which long-term career prospects have been the most important in choosing your career, and why?

.....

GO TO E1

E. Relatedness current job to PhD

1. How related is the subject of your job to the subject of your PhD?

- Very closely related
- Closely related
- Somewhat related
- Not related at all

2. Did you develop the following skills during your PhD, and are you using them in your job?

	Developed during PhD?			Using in current job?		
	Yes, very much	Yes, somewhat	No	Yes, very much	Yes, somewhat	No
Research skills						
i. Scientific knowledge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii. Analytical thinking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working with others						
iii. Social skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv. Teamwork	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal effectiveness						
v. Independence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vi. Taking initiative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vii. Stress management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
viii. Self-confidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ix. Learning ability	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication skills						
x. Presentation skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
xi. Writing skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

xii.	Language acquisition skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	General management						
xiii.	Project management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

GO TO E5

3. How related was the subject of your last main job to the subject of your PhD?

- Very closely related
- Closely related
- Somewhat related
- Not related at all
- Don't know

Please indicate to what extent you agree with the following statements.

4. Did you develop the following skills during your PhD, and were you using them in your last main job?

	Developed during PhD?			Using in last job?		
	Yes, very much	Yes, somewhat	No	Yes, very much	Yes, somewhat	No
Research skills						
i.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working with others						
iii.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal effectiveness						
v.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vi.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
vii.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
viii.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ix.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Communication skills						
x.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

xi. Writing skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
xii. Language acquisition skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
General management						
xiii. Project management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

GO TO E5

5. What has been the main value of having a PhD been for you?

.....

6. In hindsight, would you do a PhD again? Please explain your answer in the box below.

- Yes, in the same field
- Yes, but in a different field
- Maybe
- No

.....

If B14 is 'Permanent job contract' GO TO F1; If B14 is 'Temporary job contract' GO TO F2;

ELSE GO TO G1

F. Temporary contracts

Please indicate to what extent you agree with the following statements.

1. Getting a permanent job contract has:

	Very much	Much	Moderately	A little	Not at all	N/A
i. Positively affected my ability to get a mortgage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii. Positively affected the stability of my family life (including romantic relationships)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii. Positively affected the possibility of starting a family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

GO TO G1

2. Would you prefer to have a permanent contract?

- Yes

- No

Please indicate to what extent you agree with the following statements.

3. Having a temporary job contract has:

	Very much	Much	Moderately	A little	Not at all	N/A
i. Negatively affected my ability to get a mortgage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii. Negatively affected the stability of my family life (including romantic relationships)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii. Negatively affected the possibility of starting a family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If B14 is 'Temporary job contract' AND (If B19 is 'Yes' OR If B20 is 'Yes' OR If B21 is 'Yes') GO TO F4; ELSE GO TO G1

Please indicate to what extent you agree with the following statements.

4. The fact that I am on a temporary job contract negatively affects:

	Very much	Much	Moderately	A little	Not at all or a positive effect
i. The quality of my R&D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii. My level of independence in my R&D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii. The innovativeness of my R&D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iv. My willingness to take risks in my R&D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

GO TO G1

G. Perception career perspectives in different sectors

1. How would you qualify the following six career aspects in academic R&D, non-academic R&D, and non-R&D?

Remember: by academic R&D we mean R&D in universities, university medical centres, affiliated institutes, and institutes of the Royal Academy of Sciences and the Netherlands Organisation for Scientific Research (Dutch: NWO); and similar organizations abroad.

a. Long-term career perspectives

	Very good	Good	Neutral	Bad	Very bad	Don't know
a. In academic R&D	o	o	o	o	o	o
b. In non-academic R&D	o	o	o	o	o	o
c. Outside R&D	o	o	o	o	o	o

1. How would you qualify the following six career aspects in academic R&D, non-academic R&D, and non-R&D?

b. Availability permanent positions

	Very good	Good	Neutral	Bad	Very bad	Don't know
a. In academic R&D	o	o	o	o	o	o
b. In non-academic R&D	o	o	o	o	o	o
c. Outside R&D	o	o	o	o	o	o

1. How would you qualify the following six career aspects in academic R&D, non-academic R&D, and non-R&D?

c. Usual length of period holding a temporary position

	Very good	Good	Neutral	Bad	Very bad	Don't know
a. In academic R&D	o	o	o	o	o	o
b. In non-academic R&D	o	o	o	o	o	o
c. Outside R&D	o	o	o	o	o	o

1. How would you qualify the following six career aspects in academic R&D, non-academic R&D, and non-R&D?

d. Quality of HRM/career policy

	Very good	Good	Neutral	Bad	Very bad	Don't know
a. In academic R&D	o	o	o	o	o	o
b. In non-academic R&D	o	o	o	o	o	o

c. Outside R&D |

2. How do you qualify the following aspects of academic research?

	Far too high	Too high	About right	Too low	Far too low	Don't know
i. Pressure to publish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ii. Pressure to obtain grants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

IF B1 is 'none of the above' GO TO II; ELSE GO TO H1

H. Mentoring

Next we would like to know more about the importance of work and career support by a mentor. A mentor is a more experienced person who teaches, sponsors and encourages you in order to promote your professional and/or personal development. A mentor can be your direct supervisor, PhD advisor or manager, but also somebody else.

Mentorship during your PhD

1. Did you have a mentor when you were working on your PhD?

- Yes **GO TO H2**
- No **GO TO H9**

2. Who was this person?

- A scientist
 - My supervisor (promotor or co-promotor)
 - A colleague from my daily work environment
 - A scientist from the same field
 - A scientist from a different field
- A friend
- A relative
- Someone else, namely:.....

3. My mentor is:

- Male
- Female

4. Do you prefer a:

- male mentor?
- female mentor?
- no preference?

5. How strong would you rate the influence of your mentor on your job choice for the first job after your PhD?

- Very strong
- Strong
- Fairly weak
- Weak
- None at all

Room for explanation:

.....

Please indicate whether you agree with the following statement.

6. My mentor helped me *obtain* my first job after PhD.

- Yes, very much
- A little
- No

Room for explanation:

7. If you are still in contact with your mentor, please tick the appropriate statements.

- We keep each other updated on our careers
- When I have to make (important) career decisions, I consult my mentor
- I make use of my mentor's network
- I send my mentor papers and grant proposals I am working on for feedback
- We are working together on one or more (research) projects
- For me my mentor is a role model

8. To sum up, what effect has your mentor had on your entire career?

- Very positive
- Positive
- Neutral
- Negative
- Very negative

GO TO H12

9. Did you miss a mentor in your job choice process after PhD?

- Yes, very much
- A little
- No

Room for explanation:

.....

Please indicate to what extent you agree with the following statement.

10. Having a mentor might have helped me to find a job after my PhD.

- Yes, very much
- A little
- No

Room for explanation:

.....

Please indicate to what extent you agree with the following statement.

11. Having a mentor during my PhD would have benefited my further career.

- Yes, very much
- A little
- No

Room for explanation:

.....

Mentorship in your current job

12. Do you have a (another) mentor now?

Remember: a mentor is a more experienced person who teaches, sponsors and encourages you in order to promote your professional and/or personal development. A mentor can be your direct supervisor, PhD advisor or manager, but also somebody else.

Yes **GO TO H13**; No **GO TO H17**

13. Please tick the appropriate statements.

	Very much	A little	No
i. My current mentor helps me to develop personal effectiveness skills (e.g. independence, taking initiative, self-confidence)	o	o	o
ii. My current mentor helps me to develop communication skills (e.g., presenting, writing)	o	o	o

iii.	My current mentor helps me to develop general management skills	o	o	o
iv.	My current mentor helps me to develop social skills (e.g., teamwork, networking)	o	o	o
v.	My current mentor helps me to choose which projects and tasks to take on at work	o	o	o
vi.	My current mentor enhances my reputation through introduction or opportunities within his/her network	o	o	o
vii.	My current mentor helps me to get socialized in the work environment	o	o	o
viii.	My current mentor provides me with career advice	o	o	o
ix.	My current mentor increases my job satisfaction	o	o	o
x.	My current mentor positively influences my productivity at work	o	o	o
xi.	My current mentor gives me feedback on work-related issues	o	o	o
xii.	My current mentor advises me how to combine my career with my private life	o	o	o

14. My current mentor is:

- Male
- Female

IF H1 is 'Yes', GO TO H16; ELSE GO TO H15

15. Do you prefer a:

- male mentor?
- female mentor?
- no preference?

16. To sum up, what effect has your current mentor had on your entire career?

- Very positive
- Positive
- Neutral
- Negative
- Very negative

GO TO II

Please indicate to what extent you agree with the following statement.

17. Missing a mentor hinders me in taking a next career step.

- Yes, very much
- A little
- No

Room for explanation:

.....

Please indicate to what extent you agree with the following statement.

18. For me, missing a mentor might be a reason to leave a job.

- Yes, very much
- A little
- No

Room for explanation:

.....

I. Family circumstances

Finally, we would like to ask you a few questions on your family circumstances as they can influence your job choice and job satisfaction. However, if you feel uncomfortable answering such questions, you can skip them.

1. What is your relationship status?

- I am living with a partner ***GO TO I2***
- I have a partner, but we are not living together ***GO TO I3***
- Single ***GO TO I4***
- Other ***GO TO I5***

2. Are you:

- Married or in a registered partnership?
- Not married or in a registered partnership?

GO TO I5

3. Are you:

- Not married or in a registered partnership?
- Married or in a registered partnership?

GO TO I5

4. Are/have you:

- Never been married or in a registered partnership?

- Divorced?
- Separated from spouse?
- Widowed?

5. Do you have children?

- Yes
- No ***GO TO 17***
-

6. How many children do you have? Please fill in the number per age group.

0-5 years: ..

6-18 years: ..

19 years or older: ..

Thank you for filling in our questionnaire.

If you are interested in receiving a summary of the results, you can tick the box below and fill in your email address.