Researcher Identity Development

THE CROSS-COUNTRY DOCTORAL EXPERIENCE SURVEY (C-DES)

User's Manual

Kirsi Pyhältö, Montserrat Castello, Lynn McAlpine, and Jouni Peltonen

Manual Version 2019

Please address correspondence to PhD. Kirsi Pyhältö; Faculty of Educational Sciences, Yliopistonkatu 9, 90014, University of Oulu, Finland. Phone: +358 50 41 50132; E-mail: Kirsi.pyhalto@oulu.fi

Acknowledgements

Contents

1. Introduction

1.1. General description

The Doctoral Experience survey is a multidimensional self-report instrument designed to measure PhD student's study experience across countries and disciplines. The C-DES focuses on measuring the main determinants of doctoral studies repeatedly identified in the literature on PhD experience. It is based on a program of quantitative and qualitative research that examined PhD students' study experience.

The C-DES assesses seven core elements of PhD experience. There are seven main sections to the C-DES, measuring motivation, supervisory and researcher community support, research writing perceptions, experienced well-being, work-life balance and research conceptions. The C-DES concerns following scales: (1) interest in doctoral studies; (2) supervisory and researcher community support; (3) research engagement; (4) burnout, (5) research writing, (6) work-life-balance and (7) research conceptions. The scales are present key determinants of doctoral experience identified frequently in the research literature of the area (McAlpine, Castello and Pyhältö, 2018). Each section can be also used separately to measure a specific element of doctoral experience.

The doctoral experience survey was originally developed and used for exploring doctoral experience among Finnish PhD students (e.g. Pyhältö, Stubb & Lonka, 2009; Pyhältö, Vekkaila & Keskinen, 2015; Sakurai, Vekkaila & Pyhältö, 2017; Löfström & Pyhältö, 2014. The first version of cross-cultural C-DES was piloted in FINS project (2014-2016). The present versions of C-DES has been further developed and validated in across seven European countries. There are Finnish, Swedish, Spanish, Catalan, Estonian, English and French-language versions of the scales available. The full versions of the scales are available in Finnish, Swedish, English and Estonian. The short versions in Spanish, Catalan and French. The scales reported in the manual are based on the cross-country data sets. The theoretical basis for each scale is reported in listing of each subscale.

1.2 Development of C-DES

Scale and item development of the C-DES was based on PhD student reports gained in qualitative, exploratory studies on PhD students' study experiences across the disciplines and countries.

Concerning burnout, item construction was based on Maslach and Jackson's burnout inventory (1981). Research engagement scale draws on both on the set of qualitative studies on PhD student engagement and study engagement inventory (Vekkaila, Pyhältö & Lonka, 2013a; 2013b; 2014; Schaufeli, Bakker, & Salanova, 2006; Salmela-Aro, 2009). From an initial item pool, items were selected for preliminary versions of the scales by using expert judgment and criteria of redundancy. Selection of items for the final version was based on item statistics of the preliminary versions and on results of confirmatory factor analysis, for the supervisory and researcher community support (see Pyhältö, Vekkaila & Stubb, 2015; Pyhältö, Peltonen, McAlpine and Castello accepted for the interest in doctoral studies scale; Lonka, Chow, Keskinen, Hakkarinen, Sandstorm & Pyhältö 2016; Castello, Pyhältö & McAlpine, 2017) for research writing scale and (see Corner, Löfström & Pyhältö, 2017) for burnout scale.

The final C-DES scales were discussed in cross-cultural teams. Researchers from each country discussed all the items in English, and adapted them into Spanish and English using forward-backward translation procedure. After this, pilot studies were conducted in each country using the versions in English, Spanish and Finnish to confirm the appropriateness of the wording both linguistically and culturally – and the overall structure of the questionnaire. The English, Spanish and Finnish C-DES scales were administered to a sample of $N = 2567$ PhD students from Finland, Spain, Denmark, and UK (61.4 % females, 38.6 % males; mean age 36.15 years). [1]

1.3 Item and Scale Characteristics

The scales of the C-DES are detailed in section 2 of this manual. The section includes all items of the C-DES, ordered by scale. Descriptive item statistics (means, standard deviations, part-whole corrected item-total correlations) and scale statistics (means, standard deviations, reliabilities) are reported as well. These statistics indicate that there is sufficient item score variation, and that item-total correlations are robust. Also, there is sufficient variation of scale scores for each scale. The reliabilities of the C-DES scales range from manageable to very good (Alpha = .46 to .94, with an average Alpha of .78 and Alpha > .80 for 9 (53.0 %) of the 17 scales and subscales).

---

[1] Subsamples were used for Supervisory and researcher community support, Research conceptions and Work-life balance scales.

Scale correlations are shown in the Appendix 1. Most of these correlations are low to medium, thus indicating discriminant validity. Higher correlations were found for neighboring constructs (e.g. blocks and procrastination). The internal structural validity of the C-DES scales in terms of scale component structures has been analyzed by means of exploratory and confirmatory factor analysis.

It takes approximately 15-30 minutes to complete and can be given both in paper and in online. PhD students rate their experiences on a seven-point Likert scale from "strongly disagree" (1) to "fully agree" (7).

2. Listing of Subscales

2.1. Interest in doctoral studies

Interest in doctoral studies reflected is in the PhD student's affects associated with the doctoral studies and personal significance given for them (Pyhältö et al. accepted). Accordingly, interest comprises of both feeling- and value-related valences (See Hidi & Renninger, 2006; Krapp, 2002; 2005) such as involvement or stimulation, whereas value-related valence refers to the attribution of personal significance or importance of the doctoral studies. PhD student interest is not an individual trait, but can vary during the studies, depending on the object of activity and the student-working environment dynamics. Interest in doctoral studies –scale comprises of three sub-scales, in total 16 items) *research interest*, curiosity to explore and create new knowledge; b) *development interest*, opportunity to cultivate one's professional skills and knowledge, and c) *instrumental interest*, using doctoral degree and the preceding studies as a mean to an end, such as getting better salaries or promotion once the degree is earned.

Table 1. Items included in the interest scale (Cronbachs alpha, Mean, Standard Deviation, and Item-total correlation

Introduction: *Evaluate the following statements about your interest in doctoral studies. I'm doing doctoral studies because... 1(=strongly disagree) ... 7(=fully agree)*

	Alpha	M	SD	ITr
Research interest (REI)	.84	5.87	1.01	-
REI1 I am inspired by the work as researcher.		5.7	1.39	.72
REI2 I want to contribute to my field of research.		5.97	1.30	.66
REI3 I am inspired by my research topic.		5.85	1.31	.64
REI4 My research is useful for others.		5.81	1.39	.61
REI5 I enjoy intellectual challenges.		6.28	.99	.58
REI6 I want to work in a research community.		5.59	1.62	.55
Development interest (DEI)	.81	6.30	1.01	-
DEI1 I want to develop my skills.		6.39	1.02	.69
DEI2 I want to develop myself.		6.30	1.17	.63
DEI3 Finding out new things is fascinating.		6.39	1.01	.64
DEI 1 I want to complete what I started.		6.33	1.16	.61
DEI 2 I want to have a doctoral degree.		6.08	1.47	.51
Instrumental interest (INI)	.81	5.11	1.46	
INI 1 I want to get a better position.		5.59	1.72	.68
INI 2 I want to get a better salary.		5.38	1.18	.66
INI 3 Degree is required in my future work.		4.76	2.08	.64
INI 4 My job prospects are better after doctoral degree.		4.80	1.96	.57
INI 5 After graduating, I want to get a post-doc at a university.		5.01	2.10	.47

Here and in similar tables we present the variables of the subscales ordered basing on the results of the factor analysis so that the variable with the highest absolute value of loading is first. We recommend that all subscale scores be calculated as arithmetic means of the variables included in the scale. E.g. Research Interest Scale score = (REI1+REI2+...+ REI6)/ 6.

2.2.   Supervisory and researcher community support

The *social support* (see also seminal work on social support by Cobb, 1976) refers to the resources both perceived to be available, and used by the PhD. students in their social environment. These comprise of both formal and informal relationships, including dyadic and group relationships within

the researcher communities, with peers, i.e. PhD students and post-PhD. researchers, supervisor(s), other senior researchers and staff members (Vekkaila, Virtanen, Taina & Pyhältö, 2018) as well as research groups, international researcher networks or special interest groups, and relationships with institutional representatives, for example funding agencies (Pyhältö, McAlpine, Peltonen & Castello 2017). They provide the primary sources of support for their work as researchers. High quality social support, particularly from the supervisor and the researcher community has been identified as one of the main determinants for successful completion of doctoral studies (Can & Walker, 2011; Basturkmen, East & Bitchener, 2012). The survey measures two complementary *forms of support*, including *emotional*, and *informational* forms of support in supervisory relationship and in researcher community interaction (Pyhältö, 2018). Emotional support consists of empathy, trust, listening, caring and belonging to a network of researcher communities with mutual obligation, whereas informational support is characterized by information, such as advice, feedback, affirmation, suggestions, and problem solving that enable an early career researcher to cope with problems. – Supervisory and researcher community support -scale comprises of two sub-scales, in total 22 items:

a) *Supervisory support*: comprising of emotional and informational support received from the supervisor(s).
b) *Research community support*: entailing emotional and informational support received from the other members of the researcher community.

Table 2. Items included in the supervisory and researcher community support scale (Cronbachs alpha, Mean, Standard Deviation, and Item-total correlation

Instruction: *Rate the following statements about your researcher community and supervision 1(=strongly disagree) ... 7(=fully agree)*

	Alpha	M	SD	ITr
Supervisory support (SS)	.93	5.52	1.23	
SS 1 I feel that my supervisors are interested in my opinions.		5.65	1.54	.86
SS 2 I receive encouragement and personal attention from my supervisors.		5.42	1.72	.83
SS3I feel that my supervisors appreciate my work.		5.52	1.55	.80
SS4 I feel that I am treated with respect.		5.67	1.61	.76
SS5 My supervisors treat the doctoral students in a fair way.		5.73	1.48	.75
SS6 I can negotiate about central choices regarding my dissertation with my supervisors.		5.78	1.45	.71
SS7 I can openly discuss any problems related to my doctoral education with my supervisors.		5.46	1.64	.72
SS8 My supervisors express critical comments on my research in a friendly manner.		5.97	1.41	.70
SS9 I often receive constructive criticism.		5.02	1.74	.66
SS10 I can tell my supervisor if a personal matter affects my work with the dissertation.		5.51	1.65	.61
SS11 My supervisors encourage me to explore alternative viewpoints in my research.		4.88	1.63725	.61
Research community support (RCS)	.88			
RCS1 I feel accepted by my research community.		5.10	1.57	.74
RCS2 I feel that the other members of my research community appreciate my work.		4.8663	1.63	.74
RCS3 There is a good sense of collegiality among the researchers I interact with.		5.11	1.54	.65
RCS4 I am treated equally in my research community.		5.21	1.65	.62
RCS5 My research community addresses problems in a constructive way.		4.50	1.62	.64
RCS6 My expertise is put to use in the research community.		4.0783	1.87	.59
RCS7 I feel like an outsider in my own research community (R)		4.45	1.92	.55
RCS8 I receive encouragement and support from the other doctoral students.		5.11	1.74	.52

RCS9 I can influence matters concerning doctoral education in my research community.		3.89	1.76	.49
RCS10 My supervisors encourage doctoral students to collaborate with each other.		4.30	1.90	.48
RC11 Rights and responsibilities between me and the other doctoral students in my immediate surroundings are equally distributed.		4.68	1.67	.47

R= This item should be reversed before calculating subscsale score or perfoming reliability or other scale analyses.

This section also includes a single item measuring satisfaction with supervision with a 1-7 scale. It can be used to asses Phd student's general experience on supervision.

Satisfaction with your supervision	
Are you satisfied with your supervision	1 (=unsatisfied)… 7 (=completely satisfied) 1 2 3 4 5 6 7

Here and also with the following scales we recommend that all subscale scores be calculated as arithmetic means of the variables included in the scale. E.g. Supervisory Support Scale Score = (SS1+SS2+..+SS11)/11 . The singe item measuring satisfaction with the supervision should be used as a single item indicating the overall satisfaction with supervision.

2.3.   Engagement in doctoral research

Engagement is characterized by a combination of study-related vigour, dedication and absorption (Salmela-Aro & Upadaya, 2012; Schaufeli et al., 2002; Salanova, Llorens, & Schaufeli, 2011). Vigour refers to high levels energy, mental resilience, persistence and willingness to invest effort to one's work while studying; dedication describes the sense of significance, inspiration and involvement achieved through research; and absorption characterizes full concentration and engrossment, or the state of being happily and singularly focused on research. This section of the survey includes 9 items measuring research engagement (the scale draws on study engagement inventory Salmela-Aro & Upadaya (2012) and series of qualitative studies on PhD students' engagement (Vekkaila et al., 2012; 2013a; 2013b; 2014).

Table 3. Items included in the research engagement scale (Cronbachs alpha, Mean, Standard Deviation, and Item-total correlation

Instruction: *Rate the following statements about your engagement in your doctoral research. 1(=strongly disagree) ... 7(=fully agree).*

	Alpha	M	SD	ITr
Engagement (EG)	.94	5.36	1.20	
EG1 I am enthusiastic about my doctoral research.		5.60	1.43	.84
EG2 I feel happy when I start working on my doctoral research.		5.37	1.44	.83
EG3 My doctoral research inspires me.		5.55	1.40	.81
EG4 When doing my doctoral research, I feel vigorous.		5.22	1.47	.79
EG5 When I conduct my doctoral research, I feel that I am bursting with energy.		5.23	1.45	.79
EG6 I find the doctoral research that I do full of meaning.		5.67	1.38	.74
EG7 I am immersed in my doctoral research.		5.10	1.56	.72
EG8 Time flies when I'm doing my doctoral research.		5.63	1.41	.72
EG9 When I am doing my doctoral research, I forget everything else around me.		4.88	1.65	.66

We recommend that the subscale score is calculated as arithmetic mean of the variables included in the scale.

2.4. Doctoral study Burnout

Burnout is resulted from prolonged exposure for over extensive work related stress (Freudenberger, 1974). It has two distinctive symptoms: exhaustion and cynicism (Bakker, Schaufeli, Leiter, & Taris, 2008; Maslach & Leiter, 2005; 2008). Exhaustion is characterized by a lack of emotional energy and feeling strained and tired at research work, whereas cynicism is characterized by losing interest in one's work and feeling that one's research has lost its meaning; distancing oneself from the doctoral studies often results in reduced involvement. This section of the survey contains two sub-scales measuring, in total 11 items.

a) *Exhaustion* resulted from doctoral studies,
b) *Cynicism* towards doctoral studies.

Table 4. Items included in the burnout scale (Cronbach's alpha, Mean, Standard Deviation, and Item-total correlation

	Alpha	M	SD	ITr
Exhaustion (EX)	.80	3.60	1.44	
EX1 I often sleep badly because of matters related to my doctoral research.		3.27	1.99	.65
EX2 The pressure of my doctoral dissertation causes me problems in my close relationships with others.		2.96	1.94	.63
EX3 I feel burned out.		3.06	1.99	.62
EX4 I brood over matters related to doctoral research a lot during my free time.		4.29	1.96	.53
EX5 I feel overwhelmed by the workload of my doctoral research.		4.43	1.73	.49
Cynicism (CY)	.87	3.09	1.50	
CY1 I have difficulties in finding any meaning to my doctoral dissertation.		2.68	1.83	.76
CY2 I feel that I am losing interest in my doctoral research.		2.89	1.94	.76
CY3 I feel my doctoral dissertation is useless.		2.52	1.70	.58
CY4 I used to have higher expectations of my doctoral research than I do now.		3.86	2.19	.65
CY5 I often feel that I fail at my doctoral research.		3.16	1.97	.72
CY6 I often have feelings of inadequacy in my doctoral research.		3.44	1.96	.53

In addition, the single item stress -scale measuring feelings of stress was utilized to measure stress-levels of PhD students (Elo, Leppänen, Jahkola, 2003).

Stress means feeling nervous, uneasym distsressed or having difficulties sleeping because of things that are bothering you.	1(=not at all)... 7(=very often)
Do you have such feelings?	1 2 3 4 5 6 7

We recommend that all subscale scores be calculated as arithmetic means of the variables included in the scale.

2.5. Research Writing

Research writing perceptions play an essential role in doctoral students' effectiveness as writers and therefore as researchers. They can be defined as mental representations, practices and habits about research writing and themselves as writers (Castelló, McAlpine, and Pyhältö 2017; Lonka et al. 2014; Lonka et al. 2018). This section of the survey includes five sub-scales including total of 21 items measuring the two dimensions of academic writing perceptions: adaptive and maladaptive writing perceptions. *Adaptative perceptions* consist of *productivity* (Lonka et al. 2014) and the consideration of writing as a way to *create knowledge* (Bereiter & Scardamalia, 1987), so that individuals enjoy investing in writing activities. *Maladaptive perceptions* are suggested to include *blocks* (Rose, 1980), *procrastination* (Lonka et al., 2014), *perfectionism* (Boice, 1993) and the perception of writing as an *innate ability* (Sawyer, 2009), the result being that researchers may avoid investing in functional activities that would advance their writing. The sub-scales of research writing perceptions are:

a) *Blocks & procrastination,* including inability to write productively and pattern of postponing or failing to start tasks that are important in terms of success; such behaviour undercuts their productivity.

b) *Perfectionism,* referring to constant insistence on a perfect product, with the result that one attempts to rework on material until it is free of all flaws, or ultimately gives up the effort.

c) *Innate ability,* referring to belief that the ability to learn is determined at birth, was one important dimension.

d) *Knowledge transforming,* to understand academic writing in terms of transforming instead of knowledge production.

e) *Productivity, perceiving* oneself as a productive and active writer i.e. having strong efficacy beliefs as a writer.

Table 5. Items included in the research writing scale (Cronbachs alpha, Mean, Standard Deviation, and Item-total correlation

Instruction: Rate the following statements about your academic writing experience.

	Alpha	M	SD	ITr
Blocks & procrastination (BP)	.84	3.53	1.22	
BP1 I find it difficult to start writing.		4.35	1.87	.69
BP2 I start writing only if it is absolutely necessary.		3.10	1.80	.68
BP3 I sometimes get completely stuck if I have to produce texts.		4.25	1.84	.61
BP4 I often postpone writing tasks until the last moment.		4.41	1.78	.54
BP5 Without deadlines I would not produce anything.		4.08	1.96	.52
BP6 I hate writing.		1.88	1.44	.51
BP7 I find it easier to express myself in other ways than writing.		3.47	1.91	.50
BP8 My previous writing experiences are mostly negative.		2.71	1.64	.47
Perfectionism (PE)	.65	4.07	1.41	
PE1 I find it difficult to hand over my texts, because they never seem complete.		3.68	1.93	.54
PE2 I could revise my texts endlessly.		4.32	1.84	.44
PE3 I find it difficult to write, because I am too critical.		4.20	1.77	.40
Innate ability (IA)	.77	2.05	1.26	
IA1 The skill of writing is something we are born with; it is not possible for all of us to learn it.		2.18	1.44	.63
IA2 Writing is a skill which cannot be taught.		1.93	1.35	.63
Knowledge transforming (KT)	.70	5.97	.98	
KT1 Writing develops thinking.		5.78	1.365	.44
KT2 Writing often means creating new ideas and ways of expressing oneself.		5.77	1.31	.55
KT3 Writing is a creative activity.		6.35	1.04	.60
Productivity (PR)	.78			
PR1 I am regular and productive writer.		3.96	1.54	.63
PR2 I produce a large number of finished texts.		3.57	1.65	.62
PR3 I write whenever I have the chance.		3.743.83	1.66	.57
PR4 I write regularly regardless of the mood I am in.			1.73	.53

2.6.   Work-life balance

The work experience and investment in work is framed by doctoral student's broader life. Hence the work as a doctoral student exists within and is a part of life experience (Woehrer 2014; Mason, Goulden & Frasch 2009). The work-life balance refers to bi-directional dynamics with personal life and doctoral experience (McAlpine, Amundsen & Jazvac-Martek, 2010; McAlpine & Amundsen, 2017). The survey measures three dimensions of work-life balance, including the extend to which the doctoral students is satisfied with the balance between the work and their personal life, perceived that life goals in terms of a desire to have children can be aligned with doctoral studies, and their work is aligned with their personal values. The scale has been developed based on set of qualitative studies (McAlpine, Amundsen & Jazvac-Martek, 2010; McAlpine & Amundsen, 2017).

Table 6. Items included in the work-life balance scale (Cronbach's alpha, Mean, Standard Deviation, and Item-total correlation

Instruction: Rate the following statements about your experience of work-life balance within doctoral research.

	Alpha	M	SD	ITr
Work-life balance (WL)	.75	4.90	1.24	
WL1 I am satisfied with my work-life balance.		4.58	1.62	.65
WL2 I am able to combine my career and life goals such as the desire for children.		4.46	1.58	.63
WL3 My work as a researcher is in line with my personal values		5.67	1.34	.46

We recommend scale score be calculated as arithmetic means of the variables included in the scale.

2.7.   Research conceptions

Research conceptions refers to the personal meaning experiencing research i.e. what does carrying out research and being a researcher means to a doctoral student (Åkerlind, 2008; Pitcher & Åkerlind, 2009; Stubb, Pyhältö & Lonka, 2012). This section of the survey comprises of two sub-scales including total of 7 items measuring the two dimensions of research conceptions: *individual-process oriented –conception (RPD)*, and *community-process oriented-conception (RP)* and about research. The scales draw on a set of prior qualitative studies on research conceptions (see e.g. Brew, 2001; Stubb et al, 2012; Åkerlind, 2008). The sub-scales of research conceptions are:

a) *Research as personal development,* comprising of personal learning and growth.

b) *Research as problem solving,* referring to answering questions, solving problems and extending knowledge.

Table 7. Items included in the research conceptions scale (Cronbach's alpha, Mean, Standard Deviation, and Item-total correlation

Instruction: Rate the following statements concerning what doing research means to you.

	Alpha	M	SD	ITr
Research as personal development (RPD)	.79	5.25	1.15	
RPD1 Doing research is a matter of personal development.		4.79	1.55	.72
RPD2 Doing research is a matter of personal learning and growth.		5.48	1.27	.61
RPD3 Doing research has to do with developing a personal journey.		5.47	1.30	.56
Research as problem solving (RP)	.66	5.78	.85	
RP1 Doing research has to do with answering questions.		5.45	1.44	.50
RP2 Doing research has to do with finding solutions to the problems.		5.41	1.44	.51
RP3 Doing research has to do with extending current concepts to obtain a better understanding.		5.78	1.10	.45
RP4 Doing research has to do with providing a deeper insight and understanding of a particular topic.		6.47	.68	.37

3. Administering and scoring the C-DES survey

The seven sections of the C-DES can be used together or singly. Within each section, the different scales can also be used separately. Scales are computed by summing the items of the scale and taking their mean. The instrument is designed to be modular and can be used to fit the needs of the researcher. It can be given in lecture or online and takes approximately 20 minutes administration time when all five sections are administered. Because self-report measures of PhD experience can generally be subject to response bias under unfavorable circumstances, the C-DES should preferably be administered on a voluntary basis, and the data be used in a depersonalized way. Particular, attention should be paid on sustaining participants' anonymity in reporting the results since number of PhD students within university ©Pyhältö et al. All rights reserved.

and within a discipline is typically somewhat low, which means students maybe easily identified by their supervisors, peers or other faculty members.

4. C-DES survey

The following C-DES survey entails also open-ended questions that complement the scales. Also the instructions for the scales used can be found here.

THE CROSS-COUNTRY DOCTORAL EXPERIENCE SURVEY (C-DES)

Think about the wholeness of your doctoral studies while answering the questionnaire.

Interest in doctoral studies

Evaluate the following statements about your interest in doctoral studies. I'm doing doctoral studies because…	1(=strongly disagree) ... 7(=fully agree)						
I am inspired by my research topic.	1	2	3	4	5	6	7
I want to get a better position.	1	2	3	4	5	6	7
I enjoy intellectual challenges.	1	2	3	4	5	6	7
I want to work in a research community.	1	2	3	4	5	6	7
I want to get a better salary.	1	2	3	4	5	6	7
I want to develop my skills.	1	2	3	4	5	6	7
I want to have a doctoral degree.	1	2	3	4	5	6	7
Finding out new things is fascinating.	1	2	3	4	5	6	7
After graduating, I want to get a post-doc at a university.	1	2	3	4	5	6	7
I want to develop myself.	1	2	3	4	5	6	7
I want to complete what I started.	1	2	3	4	5	6	7
My research is useful for others.	1	2	3	4	5	6	7
Degree is required in my future work.	1	2	3	4	5	6	7
I want to contribute to my field of research.	1	2	3	4	5	6	7
My job prospects are better after doctoral degree.	1	2	3	4	5	6	7
I am inspired by the work as researcher.	1	2	3	4	5	6	7

Some other reason, please specify

_____

_____

_____

Supervisory and researcher community support

Rate the following statements about your research community and supervision.	1(=strongly disagree) ... 7(=fully agree)						
I often receive constructive criticism.	1	2	3	4	5	6	7
I can negotiate about central choices regarding my dissertation with my supervisors.	1	2	3	4	5	6	7
My expertise is put to use in the research community.	1	2	3	4	5	6	7
I feel that I am treated with respect.	1	2	3	4	5	6	7
I feel that the other members of my research community appreciate my work.	1	2	3	4	5	6	7
I receive encouragement and personal attention from my supervisors.	1	2	3	4	5	6	7
I feel that my supervisors are interested in my opinions.	1	2	3	4	5	6	7
I feel accepted by my research community.	1	2	3	4	5	6	7
There is a good sense of collegiality among the researchers I interact with.	1	2	3	4	5	6	7
My supervisors encourage me to explore alternative viewpoints in my research.	1	2	3	4	5	6	7
I feel like an outsider in my own research community.	1	2	3	4	5	6	7
I can openly discuss any problems related to my doctoral education with my supervisors.	1	2	3	4	5	6	7
I can tell my supervisor if a personal matter affects my work with the dissertation.	1	2	3	4	5	6	7
Rights and responsibilities between me and the other doctoral students in my immediate surroundings are equally distributed.	1	2	3	4	5	6	7
I receive encouragement and support from the other doctoral students.	1	2	3	4	5	6	7
I feel that my supervisors appreciate my work.	1	2	3	4	5	6	7
My supervisors encourage doctoral students to collaborate with each other.	1	2	3	4	5	6	7
My research community addresses problems in a constructive way.	1	2	3	4	5	6	7
I am treated equally in my research community.	1	2	3	4	5	6	7
I can influence matters concerning doctoral education in my research community.	1	2	3	4	5	6	7
My supervisors treat the doctoral students in a fair way.	1	2	3	4	5	6	7
My supervisors express critical comments on my research in a friendly manner.	1	2	3	4	5	6	7

Satisfaction with your supervision	1(=unsatisfied) … 7(=completely satisfied)						
Are you satisfied with your supervision?	1	2	3	4	5	6	7

Please state the reasons.

_____

_____

What best represents how you go about your research?

☐ Mainly on my own
☐ As much on my own as in researcher team or teams
☐ Mainly in a researcher team or teams

The following statements concern your national and international researcher collaboration from the beginning of your doctoral studies.

	No	Yes
I have presented at national conferences.		
I have co-authored papers with international researchers.		
I have participated in international courses or summer schools.		
I have presented at international conferences.		
I have participated in researcher exchange during my doctoral studies.		

Engagement in doctoral research

Rate the following statements about your engagement in your doctoral research.	1(=strongly disagree) ... 7(=fully agree)						
When I conduct my doctoral research, I feel that I am bursting with energy.	1	2	3	4	5	6	7
I find the doctoral research that I do full of meaning.	1	2	3	4	5	6	7
Time flies when I'm doing my doctoral research.	1	2	3	4	5	6	7
When doing my doctoral research, I feel vigorous.	1	2	3	4	5	6	7
I am enthusiastic about my doctoral research.	1	2	3	4	5	6	7
When I am doing my doctoral research, I forget everything else around me.	1	2	3	4	5	6	7
I feel happy when I start working on my doctoral research.	1	2	3	4	5	6	7
My doctoral research inspires me.	1	2	3	4	5	6	7
I am immersed in my doctoral research.	1	2	3	4	5	6	7

Doctoral study burnout

Rate the following statements about your experience of strain within doctoral research.	1(=strongly disagree) ... 7(=fully agree)						
I often feel that I fail at my doctoral research.	1	2	3	4	5	6	7
I feel burned out.	1	2	3	4	5	6	7
The pressure of my doctoral dissertation causes me problems in my close relationships with others.	1	2	3	4	5	6	7
I brood over matters related to doctoral research a lot during my free time.	1	2	3	4	5	6	7
I often sleep badly because of matters related to my doctoral research.	1	2	3	4	5	6	7
I often have feelings of inadequacy in my doctoral research.	1	2	3	4	5	6	7
I feel overwhelmed by the workload of my doctoral research.	1	2	3	4	5	6	7
I have difficulties in finding any meaning to my doctoral dissertation.	1	2	3	4	5	6	7
I feel that I am losing interest in my doctoral research.	1	2	3	4	5	6	7
I feel my doctoral dissertation is useless.	1	2	3	4	5	6	7
I often have feelings of inadequacy in my doctoral research.	1	2	3	4	5	6	7
I used to have higher expectations of my doctoral research than I do now.	1	2	3	4	5	6	7

Stress means feeling nervous, uneasy, distressed or having difficulties sleeping because of things that are bothering you.	1(=not at all) ... 7(very often)						
Do you have such feelings?	1	2	3	4	5	6	7

Satisfaction with doctoral studies	
Are you satisfied with your doctoral studies?	1(=unsatisfied) … 7(=completely satisfied) 1 2 3 4 5 6 7

Research Writing

Rate the following statements about your academic writing experience.	1(=strongly disagree) ... 7(=fully agree)						
I often postpone writing tasks until the last moment.	1	2	3	4	5	6	7
Writing is a creative activity.	1	2	3	4	5	6	7
I find it difficult to write, because I am too critical.	1	2	3	4	5	6	7
My previous writing experiences are mostly negative.	1	2	3	4	5	6	7
I write regularly regardless of the mood I am in.	1	2	3	4	5	6	7
I produce a large number of finished texts.	1	2	3	4	5	6	7
Without deadlines I would not produce anything.	1	2	3	4	5	6	7
I sometimes get completely stuck if I have to produce texts.	1	2	3	4	5	6	7
I find it difficult to start writing.	1	2	3	4	5	6	7
I find it easier to express myself in other ways than writing.	1	2	3	4	5	6	7
The skill of writing is something we are born with; it is not possible for all of us to learn it.	1	2	3	4	5	6	7
I find it difficult to hand over my texts, because they never seem complete.	1	2	3	4	5	6	7
I start writing only if it is absolutely necessary.	1	2	3	4	5	6	7
I hate writing.	1	2	3	4	5	6	7
I am a regular and productive writer.	1	2	3	4	5	6	7
I could revise my texts endlessly.	1	2	3	4	5	6	7
Writing is a skill which cannot be taught.	1	2	3	4	5	6	7
Writing develops thinking.	1	2	3	4	5	6	7
Writing often means creating new ideas and ways of expressing oneself.	1	2	3	4	5	6	7
I am a regular and productive writer.	1	2	3	4	5	6	7
I produce a large number of finished texts.	1	2	3	4	5	6	7
I write whenever I have the chance.	1	2	3	4	5	6	7
I write whenever I have the chance.	1	2	3	4	5	6	7
Writing is a skill which cannot be taught.	1	2	3	4	5	6	7
Writing is difficult because the ideas I produce seem stupid.	1	2	3	4	5	6	7
Writing often means creating new ideas and ways of expressing oneself.	1	2	3	4	5	6	7

Work-life balance

Rate the following statements about your experience of work-life balance within doctoral research.	1(=strongly disagree) ... 7(=fully agree)						
I am able to combine my career and life goals such as the desire for children.	1	2	3	4	5	6	7
My work as a researcher is in line with my personal values	1	2	3	4	5	6	7
I am satisfied with my work-life balance.	1	2	3	4	5	6	7

Research Conceptions

Rate the following statements concerning what doing research means to you.	1(=strongly disagree) ... 7(=fully agree)						
Doing research is a matter of personal development.	1	2	3	4	5	6	7
Doing research is a matter of personal learning and growth.	1	2	3	4	5	6	7
Doing research has to do with developing a personal journey.	1	2	3	4	5	6	7
Doing research has to do with being famous or recognized in your area of work.	1	2	3	4	5	6	7
Doing research has to do with having your papers published and others reading them.	1	2	3	4	5	6	7
Doing research has to do with obtaining qualifications and gaining accomplishments	1	2	3	4	5	6	7
Doing research has to do with extending current concepts to obtain a better understanding.	1	2	3	4	5	6	7
Doing research has to do with finding solutions to the problems.	1	2	3	4	5	6	7
Doing research has to do with answering questions.	1	2	3	4	5	6	7
Doing research has to do with providing a deeper insight and understanding of a particular topic.	1	2	3	4	5	6	7

The following statements concern your national and international researcher collaboration. Next to each statement, choose the item which best represents the frequency with which you have done the activity from the beginning of your PhD.

	Never	Between 1-2 times	Between 3-4 times	Between 5-6 times	More than 6 times
I have done research projects with other researchers in my country that do not include my PhD supervisor.					
I have co-authored papers with other researchers in my country that include my PhD supervisor.					
I have co-authored papers with other researchers in my country that do not include my PhD supervisor.					
I have presented at national conferences.					
I have co-authored papers with international researchers.					
I have participated in international courses or summer schools.					
I have presented at international conferences.					

Have you already published?

☐ Yes
☐ No

How many publications have you had?

Number of publications as a first author in a peer-reviewed journal or book	☐
Number of publications as a first author in a non peer-reviewed journal or book	☐
Number of publications in a peer-reviewed journal or book not as a first author	☐
Number of publications in a non peer-reviewed journal or book not as a first author	☐

Have you done a research stage or have an invitation abroad during your PhD studies?

☐ Yes
☐ No

In what context have you done your research stage or invitation abroad?
(mark as many options as you consider appropriate)

☐ As a PhD fellowship
☐ As a Post-doc
☐ As an invited researcher
☐ Other

What best represents how you go about your research?

☐ Mainly on my own
☐ As much on my own as in research team or teams
☐ Mainly in a research team or teams

Have you considered dropping out of your doctoral studies?

☐ Yes
☐ No

State briefly the reasons why you considered dropping out of your doctoral studies.

_____

_____

Have you ever interrupted your doctoral studies?

☐ Yes
☐ No

State briefly the reasons why you interrupted your doctoral studies

_____

_____

Satisfaction with training	
The training provided by the faculty/doctoral school/university is in line with my needs	1(=strongly disagree) … 7(=strongly agree) 1 2 3 4 5 6 7

Satisfaction with doctoral studies	
Are you satisfied with your doctoral studies?	1(=unsatisfied) … 7(=completely satisfied) 1 2 3 4 5 6 7

Indicate what kind of work you would like to do after earning your degree choosing only one of the following options.

☐	Lecturer at a research intensive university
☐	Lecturer at a non research intensive university
☐	Postdoc fellowship
☐	Researcher in a university
☐	Researcher in the private sector
☐	Researcher in government
☐	Administrator in a college or university
☐	Teacher/ administrator at elementary or secondary level
☐	Administrator or manager in the private sector
☐	Administrator or manager in government
☐	Returning to, or continuing, in the same employment/position
☐	Professional (self-employed or in an agency)
☐	Other

Please answer briefly the following questions regarding the role of your work in your personal life

In thinking beyond your doctoral work, what other features of your life (e.g., family, partner, physical activity) influence how you go about your acamedi work?

_____

_____

Why?

_____

_____

To what extent do you feel you are able to achieve work-life balance?

_____

_____

What challenges and/or strategies contribute to this balance (or lack thereof)?

_____

_____

Year of birth _____

Year of enrolment in doctoral studies _____

Estimated year of graduation _____

Have you any children?

☐ No
☐ Yes

If you have children, please indicate how many _____

At the moment, I am completing my doctorate...

☐ full-time
☐ part-time

My dissertation will be in the form of...

☐ Monograph
☐ Summary of articles
☐ I don't know

69. Principal source of income at the moment

☐ A post at the university e.g. assistant
☐ A doctoral scholarship
☐ A scholarship in a research project
☐ Work outside university
☐ No funding at the moment
☐ Other please specify _____

Doing research entails different kind of events and turning points, both positive and negative. Please, describe briefly your experiences related to different moments.

Positive turning points

The most positive event or experience from the beginning of my doctoral journey until now was when... (please note when, where and who was involved)

_____

_____

This event or experience was important to me because...

_____

_____

At that time I felt...

_____

_____

In relation to this, now, I feel...

_____

_____

Negative turning points

The most negative event or experience from the beginning of my doctoral journey until now was when... (please note when, where and who was involved)

_____

_____

In that moment, what I did was...

_____

_____

This event or experience was important to me because...

_____

_____

At that time I felt...

_____

_____

In relation to this, now, I feel...

_____

_____

5. References

Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. Work & Stress, 22, 187-200. doi: 10.1080/02678370802393649

Basturkmen, H., East, M., & Bitchener, J. (2012). Supervisors' on-script feedback comments on drafts of dissertations: Socialising students into the academic discourse community. Teaching in Higher Education, 19, 432–445. doi:10.1080/13562517.2012.752728

Bereiter, C., & Scardamalia, M. (1987). The psychology of written composition. Hillsdale, NJ: Erlbaum.

Boice, R. (1993). Writing blocks and tacit knowledge. Journal of Higher Education, 64, 19-54. doi:10.2307/2959976

Brew, A. (2001). Conceptions of research: a phenomengraphic study. Studies in Higher Education, vol. 26(3), 271-285. doi: 10.1080/03075070120076255

Can, G., & Walker, A. (2011). A model for doctoral students' perceptions and attitudes toward written feedback for academic writing. Research in Higher Education, 52(5), 508–536. doi: 10.1007/s11162-010-9204-1

Castelló, M., McAlpine, L., & Pyhältö, K. (2017). Spanish and UK post-PhD researchers: Writing perceptions, well-being and productivity. Higher Education Research & Development, 36(6), 1108-1122. doi: 10.1080/07294360.2017.1296412

Cornér, S., Löfström, E., & Pyhältö, K. (2017). The relationships between doctoral students' perceptions of supervision and burnout. International Journal of Doctoral Studies, 12, 91-106.

Cobb, S. (1976). Social support as a moderator of life stress. Psychosomatic Medicine, 38, 300–314.

Elo, A.-L., Leppänen, A., & Jahkola, A. (2003). Validity of a single-item measure of stress symptoms. Scandinavian Journal of Work, Environment & Health, 29(6), 444-451.

Hidi, S., & Renninger, K. (2006). The four-phase model of interest development. *EducationalPsychologist*, 41(2), 111–127.

Freudenberger, H. J. (1974). Staff burn-out. Journal of Social Issues, 30, 159-165.
Krapp 2002: Structural and dynamic aspects of interest development: theoretical considerations from an Ontogenetic Perspective. Learning and Instruction 12(4), 383-409.

Krapp , A. (2005). Basic needs and the development of interest and intrinsic motivational orientations. Learning and Instruction, 15(5), 381-395

Lonka, K., Chow, A., Keskinen, J., Hakkarainen, K., Sandström, N., & Pyhältö, K. (2014). How to measure PhD. students' conceptions of academic writing–and are they related to well-being? Journal of Writing Research, 5(3), 245-269. doi: 10.17239/jowr-2014.05.03.1

Lonka, K. M., Ketonen, E. E. H., Vekkaila, J., Lara, M. C., & Pyhältö, K. M. (2018). Doctoral students' epistemic beliefs about writing, experienced well-being, and perceptions of their academic environment. *Higher Education*. https://doi.org/10.1007/s10734-018-0290-x

Löfström, E., & Pyhältö, K. (2014). Ethical Issues in Doctoral Supervision: The Perspectives of PhD Students in the Natural and Behavioral Sciences. *Ethics & Behavior*, *24*(3), 195-214. https://doi.org/10.1080/10508422.2013.830574

Maslach, C. & JacksonS.E. (1981). The measurement of experienced burnout. Journal of Organizational Behavior, 2(2), 99-113. doi: 10.1002/job.4030020205

Maslach, C. & Leiter, M. P. (2005). Reversing burnout: How to rekindle your passion for your work. Stanford Social Innovation Review, 3(4), 42-49.

Maslach, C., & Leiter, M. P. (2008). Early predictors of job burnout and engagement. Journal of Applied Psychology 93 (3), 498-512. doi: 0.1016/S1479-3555(03)03003-8

Mason, M., Goulden, M., & Frasch, K. (2009). Why graduate students reject the fast track: A study of thousands of doctoral students shows that they want balanced lives. Academe *95* (1), 1-16.

McAlpine, L., & Amundsen, C. (2017). How do the career intentions of PhDs and post-PhDs reflect personal lives and career opportunities? Paper presented at the EARLI conference, Tampere, Finland.

McAlpine, L., Amundsen, C., & Jazvac-Martek, M. (2010). Living and imagining academic careers. In L. McAlpine & G. Akerlind (Eds.). Becoming an academic: International Perspectives. London: Palgrave Macmillan, 125-154.

McAlpine, L., Pyhältö, K. & Castelló, M. (2018). Building a more robust conception of early career researcher experience: what might we be overlooking? Studies in Continuing Education, 40(2), 149-165. doi:10.1080/0158037X.2017.1408582

Pitcher, R., & Åkerlind, G. S. (2009). Postdoctoral researchers' conceptions of research: A metaphor analysis. The International Journal for Researcher Development, 1, 42-56. doi:10.1108/1759751X201100009.

Pyhältö, K. (2018). Function of supervisory and researcher community support in PhD and post-PhD trajectories. In E. Bizer, L. Frick, M. Fourie-Malherbe, & K. Pyhältö (eds.), Spaces, journeys and new horizons for postgraduate supervision (pp. 205-222). (Studies into Higher Education; Nro 5). Stellenbosch: AFRICAN SUN MeDIA.

Pyhältö, K., McAlpine, L., Peltonen, J., & Castello, M. (2017). How does social support contribute to engaging Post-PhD experience? European Journal of Higher Education, 7(4), 373-387. doi: 10.1080/21568235.2017.1348239

Pyhältö, K., Stubb, J., & Lonka, K. (2009). Developing scholarly communities as learning environments for doctoral students. International Journal for Academic Development, 14(3), 221–232. doi: 10.1080/13601440903106551

Pyhältö, K., Vekkaila, J, & Keskinen, J. (2015). Fit matters in the supervisory relationship: doctoral students and supervisors perceptions about the supervisory activities. Innovations in Education & Teaching International. 52(1), 4-16. doi: 10.1080/14703297.2014.981836.

Sakurai, Y., Vekkaila, J., Pyhältö, K. (2017). More or less engaged in doctoral studies? Domestic and international students' satisfaction and motivation for doctoral studies in Finland. Research in Comparative and International Education, 12(2), 143-159.

Rose, M. (1980). Rigid Rules, Inflexible Plans, and the Stifling of Language: A Cognitivist Analysis of Writer's Block. College Composition and Communication, 31(4), 398-401.

Salanova, M., Llorens, S., & Schaufeli, W.B. (2011). Yes, I can, I feel good, and I just do it! On gain cycles and spirals of efficacy beliefs, affect and engagement. Applied Psychology: An International Review, 60, 255-285.

Salmela-Aro, K. (2009) Opiskelu-uupumusmittari SBI 9 yliopisto- ja ammattikorkeakouluopiskelijoille. Ylioppilaiden terveydenhoitosäätiön tutkimuksia 46. Kehys Oy

Salmela-Aro, K., & Upadaya, K. (2012). The schoolwork engagement inventory: Energy, dedication, and absorption (EDA). European Journal of Psychological Assessment, 28(1), 60-67. doi: 10.1027/1015-5759/a000091

Sawyer, K. (2009). Writing as a collaborative act. In S. B. Kaufman & J. C. Kaufman (Eds.), The psychology of creative writing (pp. 166-179). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511627101.012

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. Educational and Psychological Measurement, 66, 701-716.

Schaufeli, W. B., Martinez, I., Pinto, A. M., Salanova, M., & Bakker, A. (2002). Burnout and engagement in university students: A cross-national study. Journal of Cross-Cultural Psychology, 33(5), 464-481.

Stubb, J., Pyhältö, K. & Lonka, K. (2012). Conceptions of research: the doctoral student experience in three domains. Studies in Higher Education, 39(2), 251-264. doi: 10.1080/03075079.2011.651449

Vekkaila, J., Pyhältö, K. and Lonka, K. (2013a). "Experiences of disengagement - a study of doctoral students in the behavioral sciences", International Journal of Doctoral Studies. 8, 61-81.

Vekkaila, J., Pyhältö, K. and Lonka, K. (2013b)."Focusing on doctoral students' experiences of engagement in thesis work", Frontline Learning Research, 1, 2, 10-32.

Vekkaila, J., Pyhältö, K. & Lonka, K. (2014). Engaging and disengaging doctoral experiences in the behavioural sciences. International Journal for Researcher Development, 5(1), 33-55.

Vekkaila, J., Pyhältö, K., Hakkarainen, K., Keskinen, J. & Lonka, K. (2012). Doctoral students' key learning experiences in natural science. International Journal for Researcher Development. 3(2), 154-183.

Vekkaila, J., Pyhältö, K. & Lonka, K. (2014). Engaging and disengaging doctoral experiences in the behavioural sciencesInternational Journal for Researcher Development. 5(1), 33-55.

Vekkaila, J., Virtanen, V., Taina, J. & Pyhältö, K. (2018) The function of social support in engaging and disengaging experiences among post PhD researchers in STEM disciplines, Studies in Higher Education, 43:8, 1439-1453, DOI: 10.1080/03075079.2016.1259307

Woehrer, V. (2014). To Say or to Go? Narratives of early-stage sociologists about persisting in academia. Higher Education Policy, 27(4), 469-87.

Åkerlind, G. S. (2008). An academic perspective on research and being a researcher: An integration of the literature. Studies in Higher Education, 33(1), 17-31.

Appendix 1. Intercorrelations of the scale items

Supervisory and researcher community support scale

	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS 10	SS 11	RCS 1	RCS 2	RCS 3	RCS 4	RCS 5	RCS 6	RCS 7	RCS 8	RCS 9	RCS 10	RCS 11
SS1	.86	.79	.72	.68	.68	.64	.65	.58	.52	.54	.41	.47	.43	.46	.44	.34	-.28	.21	.38	.34	.34
SS2	-	.79	.69	.59	.65	.62	.60	.63	.53	.51	.42	.50	.41	.43	.44	.35	-.30	.23	.34	.38	.29
SS3		-	.68	.61	.62	.58	.61	.58	.52	.49	.48	.52	.45	.47	.44	.42	-.33	.27	.34	.33	.30
SS4			-	.67	.55	.55	.61	.54	.45	.50	.55	.55	.53	.57	.52	.39	-.33	.22	.39	.36	.35
SS5				-	.58	.58	.65	.53	.48	.49	.34	.33	.39	.46	.48	.27	-.20	.16	.33	.23	.35
SS6					-	.56	.53	.58	.47	.52	.35	.31	.38	.35	.37	.27	-.28	.20	.28	.25	.32
SS7						-	.52	.45	.69	.49	.35	.33	.32	.37	.44	.27	-.18	.18	.36	.31	.25
SS8							-	.51	.46	.51	.32	.28	.39	.42	.40	.19	-.20	.16	.32	.29	.22
SS9								-	.36	.49	.44	.44	.33	.43	.41	.33	-.34	.26	.31	.36	.27
SS10									-	.35	.30	.29	.23	.25	.33	.24	-.15	.20	.28	.28	.22
SS11										-	.28	.31	.40	.41	.43	.23	-.19	.11	.33	.38	.31
RCS1											-	.68	.58	.55	.45	.50	-.57	.46	.37	.36	.31
RCS2												-	.56	.53	.49	.62	-.50	.37	.40	.33	.33
RCS3													-	.55	.58	.42	-.33	.32	.31	.26	.39
RCS4														-	.59	.34	-.36	.23	.31	.36	.36
RCS5															-	.40	-.33	.27	.38	.37	.42
RCS6																-	-.41	.35	.38	.32	.28
RCS7																	-	-.36	-.31	-.29	-.17
RCS8																		-	.25	.41	.38
RCS9																			-	.30	.30
RCS10																				-	.24

Engagement in doctoral research

	EG2	EG3	EG4	EG5	EG6	EG7	EG8	EG9
EG1	.75	.77	.74	.70	.72	.64	.60	.54
EG2	-	.77	.69	.70	.66	.62	.63	.58
EG3		-	.64	.64	.70	.62	.59	.59
EG4		.	-	.73	.62	.63	.62	.54
EG5				-	.62	.59	.62	.55
EG6					-	.55	.57	.46
EG7						-	.53	.56
EG9							-	.60

Doctoral study burnout scale (Cynicism and Exhaustion)

	CY2	CY3	CY4	CY5	CY6	EX1	EX2	EX3	EX4	EX5
CY1	.74	.62	.57	.61	.42	.36	.37	.58	.25	.24
CY2	-	.53	.60	.62	.45	.40	.39	.66	.26	.29
CY3		-	.43	.42	.32	.24	.27	.40	.17	.20
CY4			-	.58	.37	.36	.42	.55	.32	.28
CY5				-	.57	.44	.48	.59	.34	.36
CY6					-	.37	.34	.39	.25	.37
EX1						-	.52	.54	.48	.40
EX2							-	.52	.45	.40
EX3								-	.38	.42
EX4									-	.31
EX5										-

Research Writing Scale

	BP2	BP3	BP4	BP5	BP6	BP7	BP8	PE1	PE2	PE3	IA2	IA1	KT1	KT2	KT3	PR1	PR2	PR3	PR4
BP1	.53	.65	.49	.45	.38	.41	.35	.39	.12	.38	.12	.08	-.02	-.03	-.11	-.34	-.34	-.33	-.25
BP2	-	.45	.48	.50	.52	.38	.35	.39	.14	.31	.19	.19	-.10	-.08	-.14	-.38	-.36	-.37	-.29
BP3		-	.38	.42	.31	.35	.35	.39	.18	.37	.09	.07	-.01	.03	-.07	-.25	-.24	-.19	-.16
BP4			-	.41	.26	.31	.26	.25	.11	.37	.10	.10	-.01	-.03	-.01	-.30	-.34	-.27	-.28
BP5				-	.26	.24	.24	.28	.12	.30	.08	.07	.01	.01	-.03	-.23	-.25	-.24	-.15
BP6					-	.37	.41	.25	.05	.17	.31	.25	-.29	-.16	-.29	-.24	-.20	-.24	-.20
BP7						-	.40	.25	.06	.23	.15	.14	-.13	-.09	-.14	-.23	-.20	-.20	-.13
BP8							-	.27	.10	.27	.20	.14	-.16	-.09	-.16	-.18	-.14	-.13	-.03
PE1								-	.46	.40	.13	.14	.04	.05	-.03	-.19	-.17	-.10	-.10
PE2									-	.27	.01	.03	.08	.13	.05	.05	.03	.14	.03
PE3										-	.06	.06	.02	.01	.03	-.20	-.17	-.11	-.13
IA2											-	.63	-.22	-.10	-.04	.02	.02	.05	-.01
IA1												-	-.19	-.08	-.02	.01	.03	.03	.03
KT1													-	.58	.41	.19	.13	.17	.16
KT2														-	.37	.23	.16	.21	.16
KT3															-	.19	.18	.24	.16
PR1																-	.56	.51	.42
PR2																	-	.46	.46
PR3																		-	.41
PR4																			-

Work-life balance scale

	WL2	WL3
WL1	.64	.44
WL2	-	.40

Research Conceptions scale

	RPD2	RPD3	RP1	RP2	RP3	RP4	RA1	RA2	RA3
RPD1	.64	.58	.12	.25	.34	.18	.22	.10	.29
RPD2	-	.43	.12	.18	.28	.23	.06	.10	.19
RPD3		-	.06	.24	.21	.15	.21	.04	.22
RP1			-	.43	.30	.37	.23	.10	.07
RP2				-	.43	.20	.25	.23	.11
RP3					-	.27	.21	.20	.05
RP4						-	.09	.07	.22
RA1							-	.19	.20
RA2								-	.28