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Four Career Stories from Doctoral Students to Doctoral Holders: Qualitative Longitudinal Examination

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

Aims: Universities and their doctoral programs open a range of career opportunities for doctoral students and doctors. There is a need to problematize assumptions related to the construction of doctoral careers. This study addresses this need by examining the development of doctoral career paths and the factors influencing them from a qualitative longitudinal perspective. This study focuses on the narrative career stories of doctoral students and doctoral graduates from a temporal perspective and at the individual level.
Study Design: The study was conducted as qualitative longitudinal research among Finnish doctoral students and later same persons as doctoral holders (N=9). The aim of the research design was to find out what kind of career paths can be constructed.
Place and Duration of Study: The research data was collected in Finland between 2009-2018 and analyzed in 2022-2023.
Methodology: This study focuses on the narrative career stories of doctoral students and doctoral graduates from a temporal perspective and at the individual level. For this study, nine doctoral students were interviewed in 2009 and again in 2018, covering the themes of doctoral studies and careers. The data was analyzed using content analysis and a narrative approach.

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Results: As a result, four narrative doctoral career stories were constructed: Competitive Academic Career, Permanent Lecturer Career, External Proletarian Career and Self-selected Balanced Career. The results suggest that starting points, personal positioning in the doctoral process and structured career opportunities have a significant impact on the dimensions, skills and, ultimately, career prospects of doctoral candidates. This study makes visible the factors involved in the construction of a doctoral career from a holistic and longer-term perspective, allowing for a deeper understanding of the dynamics of the complexity of doctoral careers.

Keywords: Doctoral studies; doctoral student; doctoral holder; career; qualitative longitudinal examination.

1. INTRODUCTION

Building an academic career in the current academic context requires a multifaceted understanding of the traditional and new nuances of the academic system and its logic. Research on doctoral training and related career experiences is important as it influences the context of scientific activity and future science-making in the scientific community and more widely. The context of this study is Finland, but the academic context and doctoral education seem to be undergoing a common evolution in Europe [1]. The university has become an academic platform with many goals and expectations, including capitalist goals [2], demands for an entrepreneurial culture [3;4] and economically exploitable innovations [5]. The management of universities is based on neoliberal goals, and these are effectively pursued through the practices of New Public Management [6]. All this is reflected in the academic culture in many ways. In Finland, for example, 13% of state funding for universities is based on measurable performance, such as published articles and journal quality ratings [7]. In addition, universities have traditional research and teaching practices. The university as an academic working environment is changing and is simultaneously leading in several directions in the knowledge economy [5].

In Finland, the University Act was reformed in 2010, separating the state budgeting of universities from the bureaucratic one, leaving universities as independent companies and granting them financial autonomy and responsibility. At the same time, several other changes were made, including the conversion of university staff's employment contracts into contractual relationships and a performance-based remuneration system. According to Ahola and Hoffman [8] and Ylijoki and Henriksson [1], these changes have resulted in universities being driven by market trends, economic competition, short employment contracts and precarious careers. Finnish doctoral education, like the entire higher education system, is highly competitive and selective [7]. Universities are relatively equal. In Finland, only universities provide doctoral degrees, and each university has a graduate school organized by faculty, consisting of several doctoral programs. This means that every doctoral student belongs to a doctoral program, regardless of the form of funding or the way in which the doctoral studies are conducted. Doctoral students can apply for a full-time doctoral position for up to four years, but the number of positions is limited and highly competitive.

A doctorate is required for an academic career, but it does not guarantee an academic career. Academic career paths are increasingly diversified and fragmented [9-11]. The doctoral process has become more streamlined and structured, giving the post-doc phase a new prominence in the doctoral career. Scholarship opportunities take better account of the post-doc stage [12], but there are major weaknesses and differences in the education systems of different countries. In recent years, Finnish universities have adopted an applied tenure track model, the "four-stage research career model". The first stage is for young doctoral researchers, the second stage is for newly graduated PhDs, the third stage is for independent professional researchers and academic managers, and the fourth stage is for professors [13]. The career model does not work systematically and there are variations both between and within universities [7]. In addition, tenured professorships are often filled through different pathways from the tenure track system. Only in a minority of universities are doctoral positions tenure-track, with the possibility of progression to professorship. The start of an academic career path is uncertain due to fragmented funding and short contracts.

There has been much research on doctoral students' career paths to doctoral degrees [e.g., 10,14,15,11,16], but a qualitative long-term perspective at the individual level is missing. Doctoral studies have often focused on doctoral students' experiences, such as guidance [17], economic factors, personal and social life [18], socio-economic family background, social capital [19], identity [20] and doctoral students' goals [12], and younger researchers' experiences of postdoctoral uncertainty [1,14]. The main career goal of early-career doctoral researchers has traditionally been to pursue an independent research career in academia [21], but today careers are more diversified [22]. The journey from doctoral student to doctoral researcher and the career that is subsequently built is composed of several factors that transcend both micro and macro levels [23,24]. Higher education policy conditions and competition cannot be controlled by individual influence, but academics must adapt and make personal choices. Prevailing circumstances in individual life courses, doctoral students and doctors can organize their everyday lives in a broader way, but not completely independently of other factors. However, a qualitative longitudinal analysis of the development of a doctoral career path and its determinants is lacking. Based on these premises, this study focuses on the following questions: what kind of narrative career stories of doctoral students and doctoral holders can be constructed from a qualitative longitudinal perspective?

2. CONTEXTUAL INFORMATION AND LITERATURE REVIEW

Doctoral education is becoming increasingly important in the European and national policy debate. Doctoral training is an important link between education, research, and innovation policies [25]. The importance of doctoral education has increased significantly in recent decades, in line with developments in international higher education policy. Higher education policy aims to increase international competitiveness, knowledge, and innovation [e.g., 26]. The European Commission has no formal competence in education policy, but policy guidance is mostly provided at national level [27]. One of the objectives of the Bologna Process and the Lisbon Treaties is to bring more coherence to higher education systems across Europe, but differences between countries still exist. In Finland and other Nordic countries, the education system, including doctoral studies, is traditionally seen as equal and equitable, as a pillar of the welfare system and a source of skilled professionals for the state [28].

PhD students are a heterogeneous group with individual life situations, career, and life goals [29]. There are as many ways of doing doctoral studies as there are doctoral students. The doctoral student's circumstances form a complex system that needs to be considered holistically and spatio-temporally [24]. Doctoral students, supervisors, inclusive spaces, and dialogues are not separated, as also Cumming [30] argued more than a decade ago. Only a few studies examine the intersection of individual and structural factors that influence career pathways [23,15]. As competition intensifies, there are numerous options and flexibilities available, but despite these, the prospects of doctoral students are uncertain [31,14]. The diversity of doctoral students is recognized at a general level, yet doctoral programs lack structures that reflect the diversity of overlapping personal, academic, and professional identities [32]. McAlpine, Skakni and Inouye [23] suggest more hybrid career models that allow individuals to combine different aspirations.

Research into the experiences of doctoral students has found that satisfaction is associated with inclusion, better well-being, and faster graduation, in contrast to burnout and lack of graduation [33]. Doctoral students' well-being and exhaustion are associated with academic practices such as perceived guidance [33] and personal life-work balance [34]. PhD students who start with low motivation and career goals are significantly more dissatisfied with their studies. However, doctoral students with low interest in research are more satisfied with their studies if they have career goals [35.] Previous studies show that completion of doctoral studies is far from optimal; depending on the discipline, 30-70% of doctoral students never complete their doctoral degree [36,37]. Those who do complete their degree show consistent determination in their studies. They face and overcome several challenges that, without adequate support, can become stressors and barriers to progress [38].

PhD students socialize in an academic context that has a significant impact on their academic career aspirations [39], and it is a common idea that PhD students go on to become researchers in academia [40]. PhD students' limited

understanding of the academic career path and its true competitiveness leads them to overestimate their chances of success in an academic career [41]. PhD students' awareness of the wide range of career opportunities is narrow, more careful guidance and support is needed [42]. Further, Li and Horta [42] divide the career choices of doctoral graduates into internal personal characteristics and preconceptions and external socialization processes, norm adoption, and knowledge about doctoral careers that can predict career choices. In addition, prior work experience and collaboration outside academia strengthen the likelihood of a non-academic career [43]. Academic pressures [44] and lack of relevant skills and support [45] also shift to non-academic careers. Regarding the gender-career relationship, studies have shown that female doctoral students have lower academic career aspirations than men because they assume that tenure-track career requirements are too high or that work-life balance is poor [11], although the opposite has been shown [39]. The transition of early-career researchers into academic positions is an important career stage and marks a point where female representation is significantly reduced [46]. Professional identities in higher education are socially constructed as gendered [47] when it is crucial to consider gendered doctoral careers [48]. In addition, different disciplines traditionally have stronger work- life connections, offering wider employment opportunities [49].

Much attention has been paid to the employment of PhDs worldwide [e.g.,31]. Despite the global and rapid expansion of doctoral education, the growth of tenured and tenure-track academic jobs has been much slower [50]. The placement of PhDs outside academia has not been painless but is becoming more common. The expansion of doctoral education is in line with the global knowledge-based economy, with knowledge and innovation being prerequisites for economic growth [40]. Doctoral education plays a key role in creating and disseminating new knowledge and fostering innovation [51]. Research and development positions are widely available for PhDs, and career opportunities are diverse [43]. Given the limited academic labor market and the increasing employment of PhDs outside academia, many PhD programs are paying more attention to the learning of transferable skills to enable a smoother transition to a non-academic career [52].

3. LONGITUDINAL QUALITATIVE EXAMINATION

Qualitative longitudinal (QL) enquiry has developed over recent decades as part of wide processual “turn” in social enquiry and the focus is more on events´ relations and dynamic processes between [53]. In QL research, the strategy is based on monitoring the same research subject, detecting changes and continuities, and analyzing the factors that contributed to change and the consequences of changes. The review is directed at changes and transitions in people’s life courses. The key point is what kind of meanings and interpretations people give to changes [54]. The purpose is to highlight the dynamic nature of the course of life and the phenomenon under examination. QL examination combines qualitative deep examination with longitudinal changes in perspective. QL research takes typically small-scale and in-depth studies of individuals or groups and tracks them intensively relatively modest time frame to generate rich and situated data. Each wave of data is used to inform the next [53].

Longitudinal research responds to the goal of understanding the life course macro-level entities of individuals and at the micro level the choices and conditions of individuals [54]. The QL study analyses how the studied individuals respond to different processes of change, why, how and on what basis they make solutions, and the meaning they give to change at each time. The review is not just targeting individual events and their impact on the life course of individuals. The review will also include the agency of individuals, how they act, adapt, and do plans for future. QL illuminate complex causal processes by teasing out their fluid, multiple and relational elements. Dynamic processes, human agency and lived experiences reveal lived life as such [53]. Ethical deliberations and chains of the reasoning about choices are also of research interest. QL enables individuals to look at life course internal logics, how change and continuity are understood, matched, and denied. In the continuity of the course of life, the narrative coherence and holistic approach is natural [53]. The ethical solutions of research solutions are central to QL examination because the individual’s participating examination talk about personal life course issues. This study is committed to European Research Guidelines (Enrio) to be closely followed.

QL explains the deeper meaning of social changes, politic measures, and various social processes. QL expands the data of the statistical numerical data set with a complex ensemble understanding about the transformation process [55,54]. QL is temporal and allows dynamic examination of the rapid changes typical in modern times. The phenomenon combines both major social change processes and everyday choices of individuals. The dynamic nature of the phenomena is dialogic, and the change is continuous. The review in longitudinal qualitative is temporally flexible, and perspective can be switched from prospective to retrospective.

4. METHODS

This QL research focuses on doctoral students´ career stories from doctoral students to doctoral holders. The narratively constructed career stories are based on data collected at two different time points: in 2009 and 2018. The data was collected through thematic interviews. The themes were wide and covered extensively entire course of life: studies, career, family, and the unification and challenges of all of these. Interviews were approximately 60-90 minutes in duration. All interviews were recorded and transcribed.

The first data was collected in 2009 when participants had their doctoral processes ongoing. The second data was collected nine years later. In both data the researched persons talked about their life courses and used narrative and temporal scale natural as life course is. The data is individual and makes academic practices, continuities, and changes more nuanced and visible. Changes and processes can be seen clearer and deeper when time perspective is longer. Individual meaningful experiences of personal career are in longitudinal explication holistic and systematic. This gives insight into how people understand, narrate, and shape their unfolding lives in the evolving world of which they are apart [53].

Participants are from three different Finnish universities, and from different disciplines. In different disciplines doctorate processes have different nuances and practices which doctoral students socialize. In this research the disciplines are social sciences, education, economics, sport sciences, social politics, psychology, and mathematics. In time when collecting the first data participants doctoral processes were at different stages. Of nine doctoral students eight were doing their dissertations as paid work in academia. One doctoral student progressed her dissertation along with another job outside academia. The participants were under 40 years old, and all had a child or children in their families. Thus, everyday family life is a common shared starting point, but not the focus of this research.

The second data was collected nine years later, in 2018. Five participants had received their doctorates, two had doctoral processes in progress and two were paused. The second data covered again the course of life extensively. One doctor had received permanent employment in academia as lecturer. Four doctors worked as fixed-term researchers in academia. The length of current employment varied from few months to five years. All the researchers were interested in working in academia in the future if funding was available. One dissertation process was almost complete, and a temporary job in academia was waiting. Three PhD students were in the process of completing their doctoral thesis but had found permanent employment outside academia.

This study focuses on the doctoral process and career. Together, the first and second data sets provide a longitudinal perspective on an individual's life, on doctoral studies and the doctoral degree and career. This provides insights into individual choices and continuity in academic and non-academic contexts, as well as the complexity of the doctoral career. In keeping with the nature of qualitative longitudinal research, the narrative nature of the life course is established.

The data is analyzed through changes in temporal continuity and dimensions:

- Starting points and personal career goals for the doctoral degree
- The status of the doctoral process and employment
- Positioning in terms of career opportunities, risks, and continuity.

These dimensions are central to the analysis and construction of longitudinal career stories. Both sets of data are temporally flexible and cover the past, present, and future. In the analysis, this constitutes a linear narrative. The life course is characterized by the re-interpretation and re-explanation of different events, and the life course narrative is constantly being structured. The combination of two narratives and a complex

academic field is needed to provide a coherent and nuanced understanding [56]. Based on the themes of the two longitudinal data sets, four narrative career narratives were constructed: Competitive Academic Career, Permanent Lecturer Career, External Proletarian Career and Self-selected Balanced Career. The career narratives are based on the data, but are narratives constructed by the researcher. The aim is to bring coherence to the participants' diverse knowledge about their doctoral studies and careers. None of the four stories is straightforward between individual participants. Instead, the stories aim to reveal the relationship between academic cultural practices and personal choices by capturing the distinctive, internally consistent ways in which doctoral students and doctoral holders build careers in or outside academia. Each of the four career stories progresses in time, with subheadings indicating the first and second parts of the material.

5. RESULTS

5.1 Competitive Academic Career

5.1.1 Meaningful doctorate process in research group

> *"I am doing my PhD in a research group and the funding has been applied for as a group. I am goal-oriented, work efficiently during working hours and focus on the essentials. Research is my passion and I want to develop as an expert."*

In this career story, doctoral studies began immediately after the master’s degree, when a supervising professor invited the student to join a research project for which funding had been secured. In addition, the PhD student was self-motivated and had a close relationship with the research team. With peers, it was possible to gain an insight into tacit academic practices and processes, such as research funding and new research methods. The role of the supervising professor was central in providing guidance, supervision, and opportunities to find their own solutions. The supervisor organized a variety of opportunities to learn new skills and organized networks. The supervisor involved and taught the PhD student in a variety of ways and supported his/her self-confidence. Even though the supervisors were busy, they were perceived as close.

The doctoral student's own account of the doctoral process was rigorous and systematic. The research topic was interesting and rewarding. The doctoral student worked diligently on the thesis and participated in the funding competition. The doctoral student was determined to tolerate the uncertainty, the short employment contract, and the low salary, but hoped this would change in the future. He / she wanted to learn about the academic world at large, to participate actively and to acquire key academic and research skills.

In this career story, the doctoral student was willing to pursue an academic career if the opportunity arose. He/she was aware of the challenges and demands of an academic career and had a timetable to achieve his/her goals. One of his/her career goals was a professorship, but he/she was aware that this would depend on many variables, such as funding, international collaboration, and publications. The PhD student was aiming for a permanent position and a researcher's job in academia.

5.1.2 Creating own position in academic competition

> *"Since completing my PhD, I have worked harder than ever. I'm lucky to be involved in research groups. The future is mixed, too much work but no certainty about anything. The competitive situation is not sustainable, but I can't jump out."*

Nine years later, the PhD student had completed his/her doctorate and was working as a researcher in academia on a temporary contract. Completing a PhD was a turning point, increasing responsibility for one's own career and the importance of obtaining research funding. It was time to prove oneself as a researcher, to establish international research networks and to publish a wealth of high-quality articles. He/she valued the wide range of skills he learned during the PhD process. The supervising professor continued to play an important role as "academic godfather", helping to network and recommending the young academic for various projects. Colleagues during the PhD remained close and with whom the research continued.

He/she estimated that doctoral studies were easy compared to the post-doctoral period. The pace and scale changed dramatically. Organizational skills were key and very important for an

academic career. He/she managed to combine the internationalization of his/her academic career with the demands of family life through shorter periods abroad and accompanying his/her family abroad. Through international visits, the development of academic expertise was an important achievement in Curricula Vitae. The exhaustion and depletion of resources was familiar to him/her. In the future, he/she planned to reduce his/her working hours and balance life. At the same time, he/she was aware of the pressure to be productive or else the career would not progress.

Despite the competition and pressure, the doctor had an inner passion for research and science. He/she developed his/her academic skills and threw himself/herself into the competition. Temporary work and low salaries were a drawback. If the academic career did not work out, the doctor would benefit from a broad range of skills in other work. However, he/she wanted to pursue an academic career and tolerate constant uncertainty.

5.2 Permanent Lecturer Career

5.2.1 From non-academic career to doctoral studies

> *"I didn't have the passion or confidence for a PhD. I was in a permanent job and came to try research for a while. Then I thought, let's try this opportunity."*

The PhD student had a permanent job in a non-academic job for a few years after completing his/her master's degree. He/she was then invited to join a research project where he/she had worked during his/her master's studies. Accepting the research job offered was not automatic and required some consideration. Eventually, he/she decided to explore the possibility, but did not immediately commit to a PhD. Research funding and varied work assignments were arranged for him/her intermittently. The dissertation was progressing well and was almost complete. The future as a doctoral candidate seemed challenging and uncertain. During the doctoral studies, the supervisor and colleagues had been a great help and support. As a doctoral researcher, he/she was aware of the greater responsibility he/she had in funding his/her own research projects.

The PhD student had learned a wide range of skills in a scientific context and was familiar with tacit academic practices. His/her articles were well received in scientific journals. Scientific writing and teaching were among his/her strengths. He defined himself/herself as goal-oriented and was willing to pursue an academic career if he/she could find a permanent job soon after his PhD. Employment opportunities and financial pressures were a concern.

5.2.2 Permanent academic position

> *"I completed my PhD and was annoyed by the precariousness of the job situation. I made a tactical move and applied for other jobs, and then I got a permanent lecturer in my own faculty. It's a varied job, and that's the best part. I'm not prepared to sacrifice my free time for work."*

After nine years, the doctorate was complete. He/she participated in various research projects, building up a wide range of skills and a reputation as a good worker. He/she was tired of fixed-term academic jobs. Before taking up a permanent position, he/she had actively applied for various academic and non-academic posts. Eventually, he/she was offered a permanent lectureship at the university, which he/she greatly appreciated. The permanent position brought balance to daily life. The perceived stress of being a fixed-term researcher was tough, and the situation would become more competitive in the future. He criticized the competitive and uncertain nature of academic work.

The lecturer had a lot of teaching responsibilities and limited time for research. However, the situation was good, and the work was varied. In terms of the number of publications, he/she was not entering an academic competition. He/she was not seeking career progression. It was a matter of value choice, according to him/her. He/she valued his/her family and leisure time and did not want to sacrifice them to academic competition. He/she was committed to teaching and was content with a limited and high-quality research publication.

5.3 External Proletarian Career

5.3.1 Figuring out what to do

> *"I have a temporary job outside the university, and work is important to me. I would like to be part of a research team, but the supervisor is distant. I'm doing a PhD on the side, trying to figure out what to do."*

In this career story, the PhD student was working full-time on a fixed-term contract outside academia. The main objective was to get a permanent job in his/her field, not to pursue an academic career. He/she had worked with his/her supervisor on the topic of the dissertation, but the topic was not related to existing research projects. However, the topic linked his/her own interests and would provide an interesting employment opportunity, which made the personal dissertation project meaningful.

The doctoral student did not fit into the academic community and felt left out. Working outside the academic community protected the doctoral student from funding competitions and the pressure to publish research. At the same time, his/her core academic skills and career were beyond his/her reach. The link to the academic community was formed through peers and supervisors at monthly seminars. Dissertation supervision was inadequate, and progress was slow. Dedicated to family life, he/she pursued full-time employment, while the dissertation played a minor role in daily life.

5.3.2 Permanent employment and dissertation in progress

> *"I moved from job to job and then got a permanent job that matches my education, and that reassures me. I'm working on my dissertation sideways at my own pace, but I'm confident it will be finished. I intend to be an expert in my field."*

After nine years, the career had progressed to permanent employment outside academia. This was a major step forward for him/her and the most important goal. Everyday life was shaped by work and family. Dissertation work progressed slowly, a few hours a week and more intensively during holidays. The relationship with the academic world was weak, and the supervisor and colleagues were distant. He/she had to make his/her own decisions about the dissertation, which took time. The promotion of the dissertation was important and there was no intention to interrupt the process. A completed dissertation would be a testament to one's own ability and perseverance. Having a permanent job had eased the perceived pressures. The dissertation process was comfortable and meaningful, but also independent and lonely.

The key objective of permanent employment was achieved, and the work was meaningful and satisfying. In the future, the work would be more practical, and, after the PhD, development projects would provide variety. Political influence and books on the research topic were also possible. Life was perceived to be balanced; the PhD came after work and family in terms of priorities. During the nine-year period, it was not clear how important the doctoral thesis would be for a career. An academic career did not seem to be an enabler or a goal in this career story.

5.4 Self-Selected Balanced Career

5.4.1 Promising but slow start

> *"I started my doctoral studies straight from my master's degree and got paid for it! The start was great and easy, now I'm tired and doubt my skills. I'm considering another job; an academic career doesn't appeal."*

The fourth career path started promisingly right after the master's degree, as a paid academic job. The professor supervising the master's thesis asked him/her to join a research project. The researcher's job was attractive as a job opportunity, as was the salary. Though lacking in motivation personally, he/she was tempted by the professor's invitation and decided to accept the offer. The study was part of a larger research project, the material and the research design were predefined. The start was promising, he/she quickly learned how to conduct research and what methods were needed. He/she fulfilled the expectations placed on him/her, but without his/her own passion for doing research. The supervising professor was supportive and helpful, as were the peers.

After a successful start to his PhD and research, he/she encountered difficulties. The research was not progressing at the desired pace and new methods were difficult. The research was done in a group during working hours, but the work followed everywhere and became a problem. He/she discussed the matter with the supervisor and received encouragement and understanding. It was obvious to him/her that a future in academia would be certain, but the employment relationship would be fixed term. He/she considered other possibilities than research, such as teaching or more practical work. He/she needed a break from the stress of the situation and was questioning his/her career choice.

5.4.2 Permanent employment and balance

> *"I have made a lot of changes in my life, surprisingly important for me is a stable job and a balanced life. Now my life situation would allow me to finish my PhD, if only I was motivated."*

After nine years, he/she had dropped out of his/her doctoral studies and applied for a teacher training course. After completing the teacher training, /she sought teaching positions outside the academic world and outside the field. Initially, he/she was offered short-term substitutes and, after a few years, permanent positions, which he/she found surprisingly important. A permanent job was reassuring for terms of identity and regular income. The distance from the dissertation did not matter, as life balance was the most important thing. At times, the unfinished dissertation annoyed him/her, but he/she did not want to sacrifice his/her own well-being for a meaningless research project. The current job offered opportunities for future development.

Discontinuation of doctoral studies was rated as a minor failure. He/she considered that he/she was not sufficiently familiar with research methods and had low self-confidence. He thought that it might be possible to return to doctoral studies if the current job proved unsatisfactory. Although the research team was split, and its core was at another university. So far, there were no concrete plans to return to doctoral studies. The doctorate was not a sufficient motivation, the competitive research environment and the academic environment were not attractive. A balanced life created new perspectives for the future.

6. DISCUSSION

This research focused on what kind of narrative career stories can be constructed from the narratives of doctoral students and doctoral graduates from the perspective of qualitative longitudinal research. Four different narrative career stories of PhD students and PhD holders were constructed from the data. The four career paths are very different from each other, with continuity and change over time, as well as choices, constraints and blurred futures that make sense. This study confirms what is known from previous research [see11,41,23] that academic careers are segmented, fragmented, stratified, and polarized. When career stories are analyzed holistically, as Aarnikoivu [24] encourages, it becomes clear that different factors form individual entities that both enable and constrain doctoral careers.

Academic careers seem very different. The *Competitive Academic Career* story follows the traditional academic research career [see 39]. After graduation, competition becomes fiercer, and employment is uncertain. This stage is risky for academic careers [see 13]. In this career story, the past seems successful and continuous, the present is full of obstacles and discontinuity, and the future in academia is uncertain. Doctors in *Permanent Lecturer Career* story realistically assess the problem of career discontinuity [see 41] and demonstrate the importance of agency. In this career path, the continuity in time is provided by the doctoral degree and employment as a permanent lecturer. The past seems abrupt and selective, the present balanced and the future under own control.

Careers outside academia expand the notion of a doctoral career where research contributions are expected [see 23]. The *External Proletarian Career* story of the doctoral student values permanent employment while the doctoral degree is less important. In the process, temporal continuity is reinforced through the employment relationship. Changes in the past, present, and future contain factors that reinforce continuity. This career story demonstrates one of the diverse career paths and the need for broad-based guidance [see 42]. The *Self-selected Balanced Career* story emphasizes the importance of intrinsic motivation and acting in accordance with one's values. Even a strong external framework for doctoral studies does not guarantee progression. On this career path, drop-outs were reinforced by perceived pressures and lack of skills, as in the study by McGee et al [44]. This career story involves change and discontinuity in the past and ultimately temporal continuity in the present and future.

Looking at the career paths concretizes continuity and change over time. For example, there is no path from outside academia to a career in academia. On the other hand, being part of the academic core allows for a research career, but the future is uncertain. According to this study, the pressures of uncertainty are common among PhD students and PhDs. Uncertainty and a longing for permanence are present in all careers, and the reaction to them and its timing is concretized in career orientation.

In the *Competitive Academic Career* story, the employment relationship is fixed term, while in all other career stories the employment relationship is permanent despite the doctoral stage [see 50].

According to this study, the careers of PhDs seem to be built on individual paths. However, academic practices are driven by a global knowledge-based economy [5] and political aspirations that follow common international lines. Competitiveness and the impact of measurement [see 7; 11] are reflected at the individual level and are visible in the everyday lives of doctoral students. The market-driven academic system [see 6] has important implications for the ways of doing science, ethical issues and the skills acquired during doctoral studies [see 52]. The logics of the current academic context challenge a deep understanding of science and the nature of research. There is a risk that efficiency drives will select for doctoral training only those individuals and research topics that fit the objectives of higher education policy.

Qualitative longitudinal research shows that there are high pressures on doctoral education and those who participate in it. The high expectations of the macro-level system are reflected at the micro-level of the individual. However, doctoral students and doctoral graduates are capable of proactive and visionary thinking and identifying changing circumstances. Personal life situations and values are also part of a doctoral student's life. Navigating the education system and creating a career path is a demanding and systemic process [also 23]. The career paths of doctoral students are complex and require more intensive attention in academic life, supervision, and professional life.

The career stories reflect the need for scalable career guidance during doctoral training. The ability of supervisors to identify a range of potential career options is essential. On the other hand, doctoral students themselves have ownership of the doctoral process. Different career options require reflection on different visions of the future, including self-awareness and courage. Analyzing potential career opportunities and skills in relation to the requirements of different careers is important. The wide-ranging competences of the doctorate remain hidden, and this needs to change. Careers can range from researcher in academia to a wide range outside academia. In the future, careers will be more flexible, and experts will work in networks and in different fields [see 43]. There is no ideal doctoral career, a career is successful and meaningful when the individual experiences it as such.

In this study, the Finnish context is an example, and the results are transferable to doctoral education in other European countries. Comparability with doctoral education in other countries is obvious, although there are nuances in educational policy and systems. Individual life courses and academic contexts form universal but unique combinations. QL enables a holistic and systemic understanding of doctoral careers. However, it should be remembered that the data are not the "pure truth" about a doctoral career but are temporal and narrative constructs. This study suggests that doctoral students and doctoral administrators live in a mosaic reality as they try to map out their life course and their doctoral career. Learning and creating new things, including new career paths, is essential to a doctoral career.

7. CONCLUSION

This research focuses on the career development of doctoral students and doctoral graduates. It is a qualitative longitudinal study. The data was collected through qualitative thematic interviews with doctoral students (N=9) in 2009 and again with the same individuals in 2018. The research question is: what kind of narrative career stories of doctoral students and doctoral holders can be constructed from a qualitative longitudinal perspective? The data was analyzed using qualitative content analysis and a narrative approach. As a result, four different narrative doctoral career paths were constructed: Competitive Academic Career, Permanent Lecturer Career, External Proletarian Career and Self-selected Balanced Career. The results suggest that starting points, personal positioning in the doctoral process and structured career opportunities have a significant impact on the dimensions, skills and ultimately career prospects of doctoral students. The study makes visible the factors involved in the construction of doctoral careers from a holistic and longer-term perspective, allowing a deeper understanding of the complex dynamics of doctoral careers. Research on doctoral training and related career experiences is important as it influences the context of scientific activity and future science-making in the scientific community and more widely.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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