



**Doctoral School of Sociology**

**THESIS SYNOPSIS**

**Veronika Magdolna Paksi**

**PHD AND CHILDBEARING?**

**WORK-LIFE BALANCE OF FEMALE PHD STUDENTS  
IN THE FIELD OF ENGINEERING**

titled Ph.D. dissertation

**Supervisors:**

**Dr. Beáta Nagy, CSc**

professor

**Dr. Gábor Király, PhD**

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Budapest, 2022

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## 1. RELEVANCE OF THE RESEARCH

The issue of work-life balance (henceforth, WLB) gained more attention after the radical expansion of the female labour force since the 1950s. This rising participation was a consequence of changes in broader economic and labour market processes, social policies, and values: there was an urgent need for female workforce after the second world war; poverty was eased by women's income and the dual-earner model; the de-industrialisation and the shift to the service sector gave women a way to move into traditionally male occupations, such as engineering. The demand for workplace flexibility and childcare support increased partly due to the greater number of single parents and the changing attitudes and aspirations of women regarding their family roles and fulfilment (Crompton et al. 2007). Recently, almost two-thirds of women are part of the labour force, including young mothers in rising numbers (OECD 2020). Governments still aim to foster women's participation, emphasising that women's employment creates new jobs in caring and domestic work and also contributes to the rising cost of welfare (Esping-Andersen 2002).

The changes in productive labour have not been followed by changes in the family roles, therefore balancing work and family life became and have remained a major issue for women (Nagy 2009). Despite their full employment, women have remained responsible for care work and household chores (Craig – Mullan 2011); meanwhile men have not become responsible for significantly more household work, let alone as full-time homemakers. WLB has long been considered as women's private issue and women's "double burden" has not decreased significantly in the past decades (Szalma et al. 2020). Though positive attitudes towards and the acceptance of working mothers have been increasing (Schwartz – Han 2014), and the problem of balancing employment with family has been increasingly relevant for men as well (Geszler 2016, Allard et al. 2011), women – especially young mothers –, struggle and sacrifice more due to the conflict of work and family life (Mason et al. 2013). Meanwhile, more and more research studies and governments have started to recognise its gendered nature and the vital role that institutional and structural factors play in WLB (Toffoletti – Starr 2016).

WLB is especially challenging for higher educated women in high-status occupations, such as research and development (Nagy – Paksi 2014, Fox et al. 2011), and the issue continuously has been gaining publicity in top-referred journals as well, such as *Nature* (Leventon et al. 2019) or the *Forbes* (Kohll 2018). It is a paradoxical situation that while female professionals have higher education, salaries and more opportunities in their careers than their previous generation's counterparts, they still face incompatible expectations stemming from both life spheres (Bonache et al. 2022, Hewlett et al. 2008). Recently, the neoliberalised academia has been particularly jeopardising work-life balance for women (Rosa 2022). Regarding work, an academic career expects the lock-step advancement of researchers through the academic pipeline (Moen – Sweet 2004), with total devotion to work, high performance and productivity (Ferree – Zippel 2015). Regarding private life, even breadwinner professional women are often solely responsible for the household and child care responsibilities, which leaves them with less time and energy for their professional work (Bomert – Leinfellner 2017, Schiebinger – Gilmartin 2010, Santos – Cabral-Cardoso 2008). While fatherhood usually has positive impacts on male professionals' careers, women struggle with WLB, particularly with the timing of motherhood (Ridgeway – Correll 2004, Paksi et al. 2016). As a consequence of this work-family imbalance, the proportion of single and/or childless female professionals is far

higher than that of their male counterparts. They often postpone motherhood, and young mothers are susceptible to slow career advancement (Mason et al. 2013).

Balancing a high commitment career and family life can be more demanding for women in the male-dominated fields of science, technology, engineering, and mathematics (STEM). Women are underrepresented in these fields, especially in senior or top positions, compared to not just their male colleagues but also to their female counterparts in social sciences and humanities (Xie et al. 2015, Burke – Mattis 2007). One of the most determining reason is that both male-dominated environment and the masculine view of science (Blickenstaff 2005) often transmit highly negative messages towards women in the forms of stereotypes, biases, and discrimination regarding their family and gender roles, and also prejudice against their professional knowledge (Maxmen 2018, Powell et al. 2009). This “chilly” environment for women (Maranto – Griffin 2011), along with the knowledge-intensiveness of STEM fields, can badly influence women’s reconciliation of work and family life, and women often are dissuaded from a career in science, particularly after obtaining PhD (Cech – Blair-Loy 2019, Hayes – Biglerb 2013, Lewis – Humbert 2010). This phenomenon is relevant both in the USA and the EU member states, even in the more gender-equal Nordic countries (Stoet – Geary 2018).

Finally, the issue of WLB is furtherly relevant in the Hungarian context, where the traditional share of family roles and the historically long institution of long maternity leave have hardly changed (Gregor – Kováts 2019). Women’s participation in STEM fields is also low, and the low gender equality and awareness in the Research and Development (R&D) sector are not conducive to providing a warm, inclusive environment for women with caring responsibilities (Tardos – Paksi 2021). Moreover, Hungarian women become mothers at earlier ages than in western, southern or the Scandinavian countries (Eurostat 2018), which could make the timing career and childbearing a hot issue for them (Paksi – Szalma 2009). Though several domestic studies called attention to this problem (Lannert – Nagy 2019, Paksi 2014, Pető 2018, Haraszthy – Hrubos 2002, Acsády 2010), only a few empirical investigations were carried out into the issue (Engler et al. 2021, Takács 2020, Nagy 2014, Schadt – Péntek 2012, Palasik 2003). Moreover, academic stakeholders have just recently recognised how the academic pipeline leaks for Hungarian women researchers (Somogyi 2016).

Though the above introduced effectively indicates how the WLB of female researchers is constrained, there have been gaps both in research knowledge, especially in the Hungarian context.

*Firstly*, though women tend to leave science after obtaining the PhD, we have little information – particularly in Europe, and also in Hungary – on their experiences during their PhD studies. PhD education is already a part of the academic career and socialisation during this period has its utmost importance which can influence their career decisions (Eddy – Gaston-Gayles 2008). Doctoral students tend to juggle multiple life domains: education, work, private and family life and are often characterised as a highly vulnerable social group regarding precarious employment and burdening working conditions (Mavriplis et al. 2010, Kurtz-Costes et al. 2006).

*Secondly*, WLB-related problems seem to be more troublesome in male-dominated knowledge-intensive fields, such as engineering and informatics, where women’s representation is the “lowest low”, and working

environments are “chillier” even within STEM fields (Shauman 2017). In engineering, the already multiplied roles and identities of female PhD students could also intersect with the masculine characteristics of STEM fields. Female PhD students at the bottom of the academic hierarchy, probably have fewer opportunities and tools compared to their male counterparts and senior colleagues to fight their way through in highly masculine environments of their research-intensive profession (Herman et al. 2013). Moreover, in several disciplines, laboratory work could also severely interfere with WLB. In the meantime, “Women in science” research is still scarce in Europe, particularly with a single focus on WLB issues, and the role of health risk of laboratory work in WLB – to my best knowledge – has been entirely unexplored.

*Finally*, though the timing of childbearing of female academics has its vital importance both in individual and academic life courses, research acknowledges poorly that they are typically female PhD students whose family establishment overlap with the “ideal” ages of becoming a mother (Mason et al. 2013, Jacobs – Winslow 2004). Postponed childbearing of higher educated women is well documented in statistics; however, the lack of qualitative answers for “why” and “how” women decide on the timing of their childbearing is also a research gap. I propose in this dissertation that young women researchers in STEM fields face significant WLB-related obstacles even as early as their PhD education due to the intersection of their gender, age, parental status, nationality, and also with the characteristics of their strongly male-dominated, knowledge-intensive occupation, particularly if it involves laboratory work with hazardous substances.

The *purpose* of this dissertation is to fill these research gaps; therefore, 27 semi-structured interviews were conducted with female PhD students in engineering in Hungary. The research is embedded into the *dual theoretical framework* of work-life balance theories and the life course perspective. While WLB theories (Grzywacz – Carlson 2007, Greenhaus – Beutell 1985) help to understand the relationship of school, work and family life, the life course approach highlights how the critical intersection of individual and academic life courses affect WLB, especially the timing of childbearing (Castaño – Webster 2011, Moen – Sweet 2004). Putting the WLB of women under the microscope at early-stage academic career is also highly relevant not “just” morally but also economically. Though governments in developed countries – particularly in the EU – took steps to increase the number and the proportion of women in science, a significant proportion of female PhD students (and also doctorate holders) are still dissuaded from academic careers (Beddoes – Pawley 2014, De Welde – Laursen 2011). At the same time, the supply of graduates is insufficient to cover the growing labour market demands for highly skilled professionals. Research findings of this dissertation can enhance the WLB of young researchers and may contribute to the elimination of barriers to women’s professional advancement and to the increase of the proportion of women in STEM fields.

## 2. RESEARCH QUESTIONS AND METHODOLOGY

Based on previous findings introduced above, the WLB of young female professionals is constrained in multifaceted ways, particularly in STEM fields. Female PhD students are often characterised by low status, insecure labour market positions, financial difficulties, and high workloads. They also face constant productivity, deadline, and peer pressure (Kurtz-Costes et al. 2006). In addition, they belong to age groups with a higher probability of having (planning) family responsibilities and children (Mason et al. 2013). Their multiplied roles and precarious learning and working conditions may make women's WLB even more complex in the Hungarian context, where lower gender awareness and equality go hand in hand with traditional family and gender norms transmitted from both home and institutions (Gregor – Kováts 2019). It is assumed that female PhD students have already experienced different WLB relationships (balance, conflict, enrichment) of their multiplied life domains (studies, work, private and family life), and have faced dilemmas concerning them. It is further assumed that they have probably developed some coping strategies (Martinez et al. 2013) during their academic career to facilitate their WLB or ease WFCs. Main stakeholder intervention points can be identified by exploring the main areas of their utmost concerns; therefore, my two main research questions are:

- 1) What dilemmas do female PhD engineering students face when trying to create a WLB?
- 2) Which strategies do female PhD engineering students (want to) apply to achieve WLB?

The critical role of WLB is well documented in research (though often as a “side product” of attrition-focused research). But if we aim to make a change, it is also necessary to explore which factors influence the WLB of women PhD students and how. Namely, to understand how their dilemmas and coping strategies evolved. Accordingly, I also created three sub-questions. The first is:

- What main factors do female PhD engineering students identify that constrain and /or facilitate their WLB?

Both empirical and theoretical research concluded that women face additional obstacles in STEM fields, which may create a further constrain to their capabilities striving for WLB (Maxmen 2018, Xie et al. 2015, Beddoes – Pawley 2014). Women PhD students already face constraints due to the intersectionality (Crenshaw 1991) of their gender, marital, and parental status, age, and student status. In STEM fields, they have to also balance their way through less supportive male environments, regarding not just their motherhood but their female and scientist identities. Being at the bottom of the academic hierarchy, they probably have fewer opportunities and tools to fight against prejudice and discrimination and also to fight for their WLB (Maranto – Griffin 2011). National context is also relevant; hence the already mentioned traditional family and gender norms in Hungary can strongly permeate their learning and working environment (Nagy 2014), supposedly making their WLB even more troublesome. In addition, I suppose that laboratory work and the use of hazardous substances also can hurt their WLB. These all lead to the second sub-question:

- How do studying and working in engineering influence the WLB of female PhD students?

Research studies highlighted that professional women face severe difficulties in integrating motherhood into academic careers; therefore, they tend to postpone childbearing (Mason et al. 2013). I suppose that the reasons for the postponed childbearing of higher educated women can be well grasped during PhD education, which is likely to overlap with the “ideal” age of becoming a mother. Highly institutionalised academic life courses may demand obtaining the degree before becoming a mother; meanwhile, women – in contrast to men – cannot postpone childbearing for an indefinite time. Moreover, their socially and culturally embedded biological clock (Mynarska 2010) clashes not just with the tenure clock but also with norms and special features of STEM fields: though women in STEM fields probably experience the chilly climate earlier than PhD education, they are more likely to face motherhood-related difficulties during doctoral studies. In addition, in Hungary, women become mothers at earlier ages, and the ideal age of motherhood is also set at earlier ages than in western countries (Paksi – Szalma 2009). This can generate a higher pressure in Hungarian top-educated women’s lives and might also lead them to adopt new life patterns to follow. My third sub-question was developed accordingly:

- How do institutional and normative contexts shape the family plans of female PhD students in engineering, especially their timing of motherhood?

The goal of the present research was to explore the WLB of young female engineers during their PhD studies. Therefore, 27 semi-structured interviews were conducted with female PhD students in the field of engineering during 2014 and 2015. The research was based on an exploratory qualitative research design, data for the research were gathered by a semi-structured interview method. The target group of this research consisted of women pursuing a PhD course in the field of engineering in Hungary.

For data collection at research site level, *purposive sampling* was applied (Saunders et al. 2016). One university was selected purposefully for the sample: it has a long history and a high reputation both in teaching and research excellence in engineering in the capital. For the further sampling at research site level, a heterogeneous (maximum variation) sampling strategy was applied within purposive sampling. Two doctoral schools were selected within engineering, based on their proportion of women, aiming at exploring different perspectives of the students in different institutional and social contexts (Creswell 2007). One of the chosen doctoral schools was in the field of chemical, environment and bioengineering (henceforth: CEBE), because the proportion of female doctoral students in this field was the highest (around 34%) and because it is characterised by intensive laboratory work. The other chosen doctoral school embraced electrical and computer engineering (henceforth: EIE), where women’s representation was the lowest, around 3% (KSH 2013).

Finding contacts with the students was challenging because their availability via institutions (websites, administration) proved to be poor. Therefore, contacts with the students were aimed to be established through the heads of the doctoral schools. During *volunteer sampling* (Saunders et al. 2016) all volunteers were selected. In the case of EIE, further cases were collected by *snowball sampling* (Saunders et al. 2016).

The sample consists of these two subsamples (CEBE and EIE), including 27 female engineer PhD students, attending two engineering doctoral schools at the same technical university in Budapest. The CEBE subsample consists of 15 engineers: 10 chemical, 5 environment and bioengineers. EIE subsample consists of 12 engineers:



5 electrical engineers and 7 informatics engineers. The average age of the PhD students was 28.6 years in both subsamples, they were aged between 24 and 33 years. Regarding the personal background, these female PhD students had a strong family background in engineering. Every fifth CEBE student and every third EIE student was single, altogether seven single students out of 27. Half of the students who had a partner were married, including 4 mothers out of 5. All mothers were young mothers, having a child or children aged between 5 months and 6 years, and all of them belonged to the CEBE subsample.

Regarding the institutional background of the interviewees, they had typically completed a highly prestigious high school in the capital or the countryside. The average age at enrolment was 25.1 and 26.5 for CEBE and EIE students, respectively. The majority of them started PhD school at the age of 23-25, and more than a third at the age of 26-32. They were in different phases of their PhD education at the time of the interviews, ranging from the first semester to almost obtaining the degree. Three of them did not work (CEBE students) and 24 of them held a job at the time of the interviews. Two-thirds of them were involved in laboratory work.

### 3. RESULTS

The main goal of my research was to explore the WLB (work-life balance) of female PhD students in the field of engineering in Hungary. Semi-structured interviews were conducted with 27 female PhD students, and the two sub-samples included CEBE (chemical, environment and bioengineer) and EIE (electrical and informatics engineer) students. The research is embedded in a dual theoretical framework. While WLB theories (Grzywacz – Carlson 2007, Greenhaus – Beutell 1985) helped to understand the relationship of school, work, and family life, the LC (life course) approach (Huinink 2013, Moen 2011) highlighted how the critical intersection of individual and academic life courses affected PhD students' WLB, especially with respect to the timing of childbearing. I applied WLB theories and the life course perspective as interdependent, complementary theories, and the intertwined interpretation of the findings allowed for a more complex understanding of the WLB of these young female professionals.

Examining how these female PhD students interpreted their own WLB, seemed to indicate that they evaluated it in terms of the time they could spend on particular activities in different realms of life. Those with a partner, but particularly with children, reported several conflicts that could be easily identified with those of time, strain, and behaviour-based conflicts described by Greenhaus and Beutell (1985). They also frequently encountered negative, but occasionally positive spillovers (Király et al. 2015). Single students not engaged in careers tended to find their lives quite balanced even if they spent significantly more time on studies. They unambiguously put this life domain as priority in their lives, at least till obtaining their degree. This is in contrast with Greenhaus and Beutell (1985), who argued that balance occurs if individuals devote equal time to life domains without hierarchy. They perhaps perceived a 'subjective fit' between work and family despite the also perceived work-life conflicts (Voydanoff 2002). For these students, role salience in education and work domains during PhD studies seemed to fit within the framework of their goals, changed and/or evolved over time (Kalliath – Brough 2008). These result reaffirm the need for a more inclusive, component approach to WLB (Rantanen 2011). In addition, some advantages of role accumulation (Sieber 1974) were also revealed, for they found joy in their life domains being a professional or/and a mother, which enriched their lives, enhancing their WLB (Grzywacz – Marks 2000).

In sum, the vast majority of female PhD students in this sample were engaged in multiple roles: education, work, private and family life, which severely challenged their WLB. Their main concerns and dilemmas were when to integrate motherhood into an academic career and how to balance their education/work and family life. In the following, firstly, I discuss the results of the three research sub-questions which helps to understand how dilemmas evolved in PhD students' lives and what strategies they applied accordingly. Secondly, I draw joint conclusions based on the three discussions, then highlight academic and policy contributions of the dissertation. Finally, the limitations of the research and some future research directions will be presented.

#### *Constraining and facilitating factors of work-life balance*

Female PhD students in the present research were also socialising as students and employees in the greedy organisations (Ward – Wolf-Wendel 2012, Lewis – Humbert 2010, Mavriplis 2010, Moen – Sweet 2004),

moreover, and were also pressured by the knowledge-intensiveness of the engineering profession. One of the most determining factors of their WLB was the heavy workload they carried both as students and as employees. Teaching activities, laboratory work, as well as short deadline projects at pharmaceutical and start-up companies were found to be especially demanding. PhD fellowships cannot provide financial independence in Hungary, and organisations also pushed students into the labour market early. This result is very much in accordance with earlier international research studies on young professionals in Europe (Friesenhahn – Beaudry 2014). The pressure for PhD students to always perform within a short period of time at a high level stemmed from the demands of both the productivity-based neoliberal academia and/or their employment in the private sector (Rosa 2021).

The heavy workload brought about long working hours for PhD students regardless of gender. Women clearly identified the dominant career model of an engineering career as a successful male research career and those who could pursue such a model, as ideal researchers (Acker 1990, Beddoes – Pawley 2014, Williams et al. 2013). Women in this sample aimed but failed to follow this model exemplified by extremely long working hours and continuous professional advancement without any considerable career breaks. Meanwhile their male counterparts seemingly could devote exclusive and undivided time, energy, devotion to their studies and work. Those students who disregarded or downright violated this devotion schema (Blair-Loy – Cech 2016) – particularly young mothers, but also those who struggled for WLB and cut off work – had been clustered into the “less acknowledged, devaluated group” of researchers by their environment. The expansion of working hours was communicated by the management and often even by the PhD students as employee-driven. Meanwhile, present results hint instead that the management tended to misuse and abuse these students’ devotion for the organisations’ sake, and these female PhD students. Thus, though these female PhD students experienced the phenomenon of the greedy institutions described by scholars (Ward – Wolf-Wendel 2012, Lewis – Humbert 2010, Mavriplis 2010, Moen – Sweet 2004), with few exceptions, none of them addressed organisational responsibility. Moreover, they considered both the struggle for WLB and their failure as a ‘good researcher’ as their own responsibility (Moen 2011).

Heavy workloads and long working hours frequently resulted in overburden in the interviewees’ lives generating work-life imbalance as scholars described in the case of female professionals (Jacobs – Gerson 2004). Though the majority of these female PhD students were devoted researchers and teachers, and the satisfaction with their professional work enriched their WLB (Grzywacz – Marks 2000, Greenhaus – Powell 2006), it did not prevent them, however, from experiencing different work-to-family conflicts (Greenhaus – Beutell 1985). Female engineers in this sample also heavily experienced the time-squeeze (Rafnsdóttir – Thamar 2013, Clarkberg – Moen 2001), strain-based conflict, stress and other health problems in their lives, similar to previous findings on PhD students (Stimpson – Filer 2011, Golde 2005, van der Lippe et al. 2006, Carter et al. 2013, Jairam – Kahl 2012). Regarding education and work, for the vast majority of the PhD students, work-life conflicts were also coupled with time-based conflicts between their studies and work. These conflicts definitely delayed obtaining their PhD and therefore their childbearing.

Interviewees continuously aimed at developing different individual strategies during their PhD education as a form of self-protection to ease the conflicts between studies, work, and family life. Boundary management (Peng

et al. 2011) was predominantly applied, particularly by mothers and those with partners. Mothers were likely to aim at separating their life domains but were unsuccessful, as Mellner et al. (2014) pointed out and this failure often led to the conflicts discussed above. A few PhD students managed to suppress long working hours, but the majority of them only temporarily achieved this aim. It is meaningful that they considered it as a successful communication with the gatekeepers if they did not have to work at the weekends and during holidays. The role of adequate scheduling also appeared as a good strategy to ease the time-squeeze, as other research has called attention to that (Peng et al. 2011), but it was also seen as individual responsibility and it required omnipresent, conscious, and tiring communication with the gatekeepers. My results show that these PhD students, being women at the bottom of the academic hierarchy, had low capability to control the length of their working time and were required instead to adopt it to the toxic working environment.

Flexible working arrangements – both PhD- and job-related – played an important role in students' WLB in the present research, as it is described by several research studies (Chung 2018, Fuller – Hirsh 2018). High flexibility – flexiplace and flexitime – in the public sector allowed women to adapt working hours to private and family needs within certain limits. The sense of capability (Hobson et al. 2011) for flexibility decreased their time squeeze, therefore reducing their stress levels and work-family conflicts. On the other hand, the lack of flexibility in the private sector severely constrained women's WLB, particularly in relation to childbearing.

However, neither did increased flexible working arrangements always lead to a better WLB in these PhD students' lives, as it was highlighted in earlier research (Hobson 2011). The phenomenon of the double-edged sword (Peters et al. 2009) also appeared when both students and the organisations overstretched the working timeframe (Nagy 2020, Mullan – Wajcman 2019). Night working shifts at home often blurred the boundaries between the life spheres causing different work-to-family conflicts in their lives (Glavin – Schieman 2012, Demerouti et al. 2014). Institutions in academia were to be perceived so greedy in some cases, that women even considered switching to the private sector to find some peace and balance. Part-time employment proved to be a good strategy for the mothers to gradually re-integrate into the labour market after childbearing, but it also violated the devotion scheme of the organisation and implied a low salary. PhD students were expected to manage and schedule their own work as introduced by Tausig and Fenwick (2001) or Kelly et al. (2010), but this personal control of time shifted the responsibility to PhD students: though they were “free” to decide on how to prioritise roles, they remained alone in the struggle for WLB (Toffoletti – Starr 2016, Lewis et al. 2007). In sum, flexible working arrangements helped, but traditionalised these students' gender roles and responsibilities (Cech – Blair-Loy 2014), even in the quite gender-balanced CEBE field.

Info-communication technologies also manifested themselves as double-edge swords in WLB in the present research as well. On the one hand, they facilitated female PhD students' everyday logistics, as it was found in previous studies (Grant et al. 2013, Mullan – Wajcman 2019). On the other hand, as Dén-Nagy (2013) drew attention to it, ICTs damaged their WLB by blurring the boundaries between the life spheres. This research revealed that apart from the communication from home after working hours, ICTs also proved to be extremely helpful by allowing remote access to control laboratory experiments from home. Meanwhile, they also fostered

employer-driven flexibility for the organisations' sake), which heightened the pressure on these students to be always available for the organisation (Smith et al. 2008, Hobson et al. 2011).

In line with the literature on uncertainties (Leathwood – Read 2020, Ivancheva 2019, Bernardi et al., 2008, Blossfeld et al. 2005) and the phenomenon of the neoliberal universities (Rosa 2021), labour market and workplace uncertainties crucially affected the WLB of female PhD students in this research. Women experienced the global phenomenon of precarity that has reached the highly prestigious institutions of research and development in Hungary as well. This high level of precarity made career starts as erratic for women in this research as for their western counterparts (O'Keefe – Courtois 2019). Results confirm that uncertainty is a considerable problem even in highly educated youths' lives, while the gendered nature of uncertainties and life courses is also exposed. It cannot be a surprise that I also found evidence for the widespread use of short-term contracts as well as the scarcity of tenure positions, since the proportion of precarious employment of women is the highest in the country among EU member states (She Figures 2021). Nevertheless, it is an intervention point for stakeholders, that this research found alarmingly extreme short-term contracts (two-six months), which made not just childbearing but everyday life conditions impossible. Though the sample did not include male PhD students, the gender-based contractual segregation (Knights – Richards 2003) of these female academics were also manifested in the interviews.

Low income was another source of uncertainty in the interviewees' lives in accordance with international literature on youths (Leathwood – Read 2020, Ivancheva 2019) and PhD students (Aitchison – Mowbray 2013, Haynes et al. 2012, Mason 2009). Low income influenced women's WLB in different negative ways. Apart from motivation and gaining professional experiences, these PhD students undertook work in parallel with their studies because – not surprisingly in the public sector in Hungary –, neither PhD fellowship stipends, nor their lowest-ranked academic staff salaries were sufficient to become financially independent. This is why male engineers tended to find positions in the private sector, hence they are still considered as the main breadwinner in the family. Though salaries are regulated in public research institutes, the present research explored gender-based practices that (further) contribute to the pay-gap in the Hungarian R&D sector (See Figures).

Though it was not the focus of the present research, it did reaffirm that income has a vital effect on childbearing, as it is introduced by a wide scale of research both in sociology and demography (Mason et al. 2013, Spéder – Kapitány 2014, Bernardi et al. 2008). Low income increased housing problems, for these students, which definitely had a delaying effect on their motherhood – particularly for those born in rural cities who had had to settle in the capital without family support nearby. Moreover, at the time of the interviews, higher educated students were not eligible for parental leave, which also undermined their financial stability to establish a family. It can be a focus of interest in future research to examine the effects of the introduction of GYED Extra in 2014 in Hungary, which aimed to resolve this obstacle.

Women, particularly mothers (all CEBE students), also faced blunt gender- and parenthood-based discrimination in the labour market, also described by previous studies (Benson et al. 2017, Hayes – Biglerb 2013, Maxmen 2018, Settles et al. 2013). CEBE students perceived quite supportive attitudes on the part of the management towards motherhood in the public sector, but this positive attitude even vanished when women became mothers

(Springer et al. 2009). They faced discrimination regarding the length of their contracts, income, reintegration after childbirth or job applications. Non-mother PhD students also experienced that the social status of mothers were devalued because it was associated with lower ability and lesser general competence in their profession (Manchester et al. 2013, Ridgeway – Correll 2004, Moss-Racusin et al. 2012). These experiences generated omnipresent insecurity and stress that permeated their lives. At the same time, EIE students encountered a plethora of gender-based discriminative practices and also attitudes that sent a clear message that motherhood and career are hardly compatible in engineering. This is perhaps why I could not find mothers in this field for the interviews. Being a mother was inconsistent with the ideal worker type in their highly male-dominated fields that scarcely supported women's WLB (Rosa 2021, Acker 2006).

The fear of negative attitudes towards mothers and their discrimination can be better understood if we take into consideration the prevailing traditional gender and family roles in Hungary, including the long tradition of the long, three-year parental leave. There is a strong social agreement in society that mothers should stay at home up to the age of three of their child (Makay 2018, Blaskó 2011), and these norms were clearly identifiable among the interviewees. Though these women seemed to be free to decide on the length of maternity leave, they were often afraid of breaking this very high normative expectation. However, women were also aware of the fact that taking a three-year break in their highly knowledge-intensive profession would face them with severe motherhood penalties in their careers (Staff – Mortimer 2012, Budig – England 2001, Correll et al. 2007).

The unequal share of household and caring tasks also challenged the WLB of these female PhD students. While childless interviewees with partners were likely to share household chores quite equally with their partners, young mother engineers seemed to take the “second shift” almost alone in this research as well – a global phenomenon that has hardly changed during the decades (Szalma et al. 2020, Schiebinger – Gilmartin 2010, Hochschild 1989). Though they sometimes underlined that their partners were caring fathers as described by Takács (2019), but deeper inquiry revealed that they featured rather traditional share of household chores and also the very traditional primary caregiver role. Though mothers in this sample experienced heavy work-family conflicts, they did not want to confront these traditional caregiver roles, either (Makay 2018, Blaskó 2011). They had reservations about childcare institutions and babysitters, and they tended to seek support instead from their parents or siblings.

In contrast with European cross-country research on women in engineering (Godfroy-Genin 2009), female engineers in this research perceived that they would have to make a choice between family and career. Women in Godfroy-Genin's research (2009) were at later stages at their career, namely, they did not leak out from the academic pipeline, and this experience may allow the assumption for them that a career and motherhood in engineering is somehow reconcilable. Nevertheless, they also noted that in a dual career one career is always behind the other. It is worth considering to what extent these female PhD students in Hungary are prone to slow career advancement or liable to abandon science if they found work and family irreconcilable at the threshold of their academic career – even before obtaining the degree (Xie et al. 2015, Mason et al. 2013).

Finally, results again confirmed that WLB is also considered as a woman's private issue and problem (Moen 2011). Though some literature described how PhD students seek support within the organisations (Cockrell – Shelley 2011), neither previous Hungarian findings (Tardos - Paksi 2020), nor the present findings support those

results. In the present research, women were likely to seek emotional and professional support from their partners (as Cech and Blair-Loy described [2019]) – if in fact they had one. Partner homogamy mitigated work-to-family conflicts and stress – as Byers et al. (2014) and Martinez et al. (2013) highlighted in the case of female doctoral students. Present results widened our knowledge how occupational homogamy (having an engineer partner) beyond educational homogamy has an essential role in WLB. Partners were not just “safe harbours” who eased work-family conflicts of women by discuss their working days and problems at home, but partners often provided professional support for their work in forms of professional arguments, proof-reading etc. – and vice versa. Meanwhile, the lack of such understanding partners often led to the end of these women’s stable relationships, which also heavily contributed women’s failure in realising their fertility plans. The lack of partner was an overall problem for the interviewee regarding their family plans – a factor that has been highlighted by Hungarian scholars (Szalma – Takács 2018, Spéder – Kapitány 2014). While Nagy (2016) revealed the vital importance of strong partner support in the case of managerial women, my results draw attention to its importance at the beginning of an academic career. However, it is worth considering, if partner support is so vital for a successful career, how single women can progress in their academic career, particularly if they are mothers.

### ***Studying and working in engineering***

In the present research, two unique features of the engineering profession were revealed that further constrained women’s WLB: laboratory work and the negative attitudes towards women stemming from their male-dominated environments.

The role of laboratory work in WLB is scarcely mentioned in STEM-related studies. The long hours PhD students in the present research spent in laboratories seriously hurt their WLB, as Husu and Koskinen (2010) and Gardner (2007) mentioned in their research. The issue was particularly relevant for CEBE students, who worked with hazardous substances, therefore, laboratory usage appeared more inflexible and rigid for them than for EIE students in terms of time, place, and safety regulations. Adequate scheduling of laboratory work would have facilitated PhD students’ WLB to some extent, but organisations shifted the responsibility to the individuals themselves. They sought some support from their group-mates and more often from their engineer partner for their laboratory work but did not have enough capabilities to effect change. They perceived the role of ICTs in laboratory work as positive, as it was discussed above, however, it cemented their non-stop availability for the organisations.

Regarding the role of the health hazards of laboratory work in the WLB of researchers, it has been, to my best knowledge, an entirely unexplored issue (albeit mentioned in Godfroy-Genin’s work, 2009). In Hungary, laboratory work is (should be) prohibited during pregnancy, therefore careers of female researchers who work with hazardous substances are more gendered. Laboratory work significantly curbs the options for women, who also should take it into consideration regarding conceiving and breastfeeding periods. CEBE PhD students had to very thoroughly plan both their PhD research and their work when they planned to give birth to a child. Accidents could always happen in laboratories (Perrow 1984) even before becoming aware of a pregnancy, and women were also exposed to cumulative effects of these substances that can later manifest themselves in gynaecological, and

therefore conception-related health problems. There were indeed such cases and experiences reported in my research.

The fact that laboratory regulations that restricted access to expectant mothers were not always kept neither by students nor by the institutions allows the assumption that they did not recognise or ignored the (often cumulative) health risk these substances implied. Failing to recognise and/or dismissing such risks tends to occur in the case of invisible hazards, such as isotopes – a finding that supports the theory of risk society described by Beck (2003) or more recently by Mansouri – Sefidgarbaei (2021). The question is whether it is really the disregard or underestimation of the health risks in their laboratory work that drove these female PhD students to break the rules, or instead the urge to meet the high demands of greedy institutions (Cosser 1974) to obtain their degree in the shortest possible time. It brings us back to the issue of responsibility that again was shifted to individuals. Taking into consideration that men PhD students can also be exposed to certain risks, I see the issue as an urgent key intervention for stakeholders.

While CEBE students in their more gender-balanced fields reported mainly gender-based, labour market and motherhood-related discrimination as I discussed above, electrical and informatics engineers, without exception, reported a large number of negative experiences (sexism, negative stereotypes and discrimination, biased evaluation or unfair treatment) unambiguously referring to the presence of the chilly climate in their highly masculine profession, in which motherhood is even less likely to be supported (Maranto – Griffin 2011). This result shows that even engineering, where women's representation is the lowest (She Figures 2018), is not a homogenous field and it is worth examining different disciplines to gain a holistic picture on WLB-related problems in STEM fields. Women engineers in this research faced other challenges in their knowledge-intensive education and in their occupation as engineers. They had to balance their lives in a male-dominated environment, which, consciously or unconsciously, transmitted gender-based negative attitudes towards women regarding both their role as women and as “engineer women” (Gardner 2007, Bernstein – Russo 2007, Litzler et al. 2005).

Electrical and informatics engineers experienced a wide range of negative experiences that were rooted in the widespread masculine view of science, which is well described in the international literature (Xie et al. 2015, Blickenstaff 2005), but scarcely in the domestic one (Nagy 2014, Paksi 2014). Women's knowledge and professional performance were often devalued and belittled by male faculty and the majority of them felt that as a woman, they had to work more for professional acknowledgement than their male counterparts. This also explains the long working hours and their detrimental effects on their WLB and health. Although female PhD students in the sample predominantly had strong researcher identities, the questioning of their competency could cast doubts on their career and family plans.

Women tended to suppress their femininity and tried to assimilate into the male-dominated environment (Kanter 1977). This coping strategy of ignoring biases (Hughes R. 2011) in order to be “one of the boys” definitely reinforces and reproduces gender inequality and discrimination both in education and on the labour market (Rhoton 2011). What is more problematic in the case of PhD students is that many of them already accepted this inequality, perhaps as a price for their PhD and acceptance as engineers. Women with a strong engineering identity are the most likely to persist in the profession (Ayre et al. 2013, Hughes G. 2011), therefore this dimension of the



socialisation process in doctoral schools would be likely to be strengthened by stakeholders and individuals as well. Meanwhile, developing a strong professional identity for women is in conflict with non-career roles in their other life domains (partnership, childbearing, leisure time, etc), because they are seen as factors that distract women from their careers (Faulkner 2009, Halrynjo – Lyng 2009). A career that requires working continuously and being available as highly devoted individuals. Thus, women with a family orientation, violate the norms of ideal students and workers (Herman – Lewis 2012) as was discussed above.

The male environments of these women were also found to be rigid and insensitive towards gender and family issues, as was found by Ülkü-Steiner et al. (2000) and Cabay et al. (2018) among female engineer PhD students. Meanwhile, in the present research, some women concluded that the university they attended did not favour women at all. Based on the reports of these women it became clear that several biased male professors at the university systematically kept an eye on these women during their academic careers. Moreover, the wide-scale of negative stereotypes these women faced exposed them to the stereotype threat (Steele – Aronson 1995), which further depressed their professional achievement. Female PhD students in the present research also reported exclusion and isolation from the exchange of information, the old boys' club (De Welde – Laursen 2011).

These women had already encountered negative experiences during their undergraduate studies, which may have established some resiliency in their life courses (Máté 2021). Meanwhile, even being a faculty member could not protect them from the intrigues in doctoral schools, which also refers to their lack of capability to fight for gender equality. My results draw attention to women's WLB-related problems being magnified in STEM fields. Women face not just the "typical" negative, gender-based experiences in the labour market as women, but they are furtherly negatively discriminated because they opted for a career in a "male" profession against all the stereotypes. Constraining factors described in this present and in the previous chapters highly contribute to the leaky pipeline phenomenon, namely that women's advancement slows down or they disappear from science after obtaining their PhD degree (Xie et al. 2015). Most importantly, even a wider pool of engineer undergraduates will not solve the problem of the lack of highly skilled professionals in the labour market, if women tend to continue to abandon their careers at later career stages. In Hungary, where the proportion of women in Research and Development and in engineering has started to decrease even further, and where there is a low awareness of gender equality, it would be vitally important to raise awareness of this issue.

### ***Timing of childbearing***

The case of female PhD students exemplifies general societal trends concerning the situation of women. Life phases spent in education are not only becoming longer but are also more important for women in general. For a growing segment of this population education time is further extended by some form of postgraduate study. The most significant dilemma for female PhD students related to the timing of their first child can be traced back to the tension between the defining social norms and the perceived feasibility of their family plans. In line with Huinink's (2013) argument I found that the transition to motherhood was often delayed among women PhD students in this research. It was concluded that in engineering, there is no such thing as an "ideal period" for

having a first child if someone aims to obtain a PhD degree, therefore, the “least bad” option is to become a mother during dissertation writing. To finish postgraduate education was clearly a strong social expectation towards youth, and also a criterion set by the students. To establish a relatively secure career track and the necessary material conditions for family plans were also strong demands for them, even if the public perceptions differ in this regard in Hungary (Pongrácz – S. Molnár 2011).

These difficulties and the high uncertainty in the outcomes of decisions are in harmony with earlier findings of Castaño and Webster (2011), that young mothers’ decisions are shaped more by social and normative pressures, rather than by their perceived best choices. Moreover, electrical and informatics engineers (all childless) in this research tended to postpone their childbearing even after obtaining their degree. They also planned fewer children than CEBE students and recount how intentional childlessness was a quite widespread pattern in their discipline. This result supports the phenomenon that though intentional childlessness is still a scarce phenomenon in Hungary, yet it is higher among higher educated women (Szalma – Takács 2018). Fertility-related decisions of these women were probably more influenced by their male-dominated environment, and also by the presumably higher opportunity cost and motherhood penalty (Staff – Mortimer 2012, Manchester et al. 2013, Budig – England 2001).

Results showed that different, even contradictory processes of standardisation and de-standardisation occur in relation to highly educated women’s life courses (Shanahan 2000, Huinink 2013). On the one hand, similarly to western countries, there is an apparent de-standardisation in the sequence of different life phases (education, work, childbearing) in Hungary. On the other hand, in the case of the investigated female PhD students a strong re-standardisation process can be observed in terms of career steps. It is an open question, however, if we can generalise results for similar life courses in STEM fields in CEE countries. Women already postpone their motherhood due to their undergraduate education, and the conflict between these opposing processes further postpones their childbearing. Moreover, the perceived risk of becoming “too old” for having children appears as a final limiting factor that must be taken into consideration when women try to harmonise their different life phases.

These three phenomena (standardisation, re-standardisation, and the perceived biological limit) – together with their respective orienting norms that are also in conflict with each other – create significant tension and paralysis by analysis (Schwartz 2004) in the lives of young female scientists and engineers. Results demonstrate that decisions in relation to one’s life-course (starting, closing and “putting on hold” various life phases) are fraught with uncertainty (Blossfeld et al. 2005). This lingering uncertainty permeates the outcomes of PhD students’ decisions in relation to harmonising family and career steps. It explains why they could not really find good (or good enough) decisions for the timing of motherhood and its effect on their career. Moreover, these uncertainties could be witnessed in the case of labour market decisions, such as finding a position and returning after childbirth. Again, career progress (see the re-standardisation argument above) with its clear and unambiguous steps was seen as a relatively stable point of reference compared to other areas of life.

Women were highly aware of their own situation and tried to find solutions to the conundrums they faced. However, solutions identified by female PhD students were highly individualised and they do not reflect the fact

that their conditions might be the result of collective life situations needing collective answers either at the micro (sharing labour market uncertainties of having children with their partners) or the macro (changing childcare assistance provisions) level. Historically, it could be argued that coordinating transitions between life courses in the state-socialist era might have been easier as it was a heavily standardised and institutionalised “state assisted” matter. However, when this type of paternalism ebbed away, new tensions appeared due to de-standardisation.

Though Hungarian youths also tend to postpone their motherhood, as it is described by scholars (Lesthaeghe, 2010), we found that the conflict of the academic and the biological clock of women and a high level of work-family imbalance also seems to strengthen and further expand the extant attitudes favouring postponement of higher educated women. At a certain age, starting one’s career cannot wait, whereas family foundation becomes less age-related (Huinink, 2013). Meanwhile, women’s choices were constrained (Castaño – Webster 2011, Hobson 2011), as they were forced to choose the “least bad options”, which also led to postponement but with high-level tension and stress in their lives. Meanwhile, these women reject the idea of late childbirth or total childlessness. Moreover, they insist on the very traditional notion of parenthood; thus, they will bear the sole responsibility for caring for their future child. This well reflects on the prevailing traditional family roles in Hungary (Gregor 2016). Furthermore, it can be said that the concept of motherhood resists value changes or de-institutionalisation in Hungary (Kohli 2007). Thus, paradoxically, the strength and obduracy of this norm make the decisions on childbirth more difficult for Hungarian women, and in turn, contribute to the low fertility rate.

### ***Conclusion***

Based on the discussion above, four main conclusions can be drawn. Firstly, both academic and individual life courses of female PhD-students in the present research were highly gendered even as early as PhD education. Their main WLB-related dilemmas, including the timing of childbearing stemmed from the irreconcilably overlapping milestones of their academic and individual life courses, a phenomenon that less likely affects men. Women PhD students’ engagement in multiple roles – education, work, private or family life – were influenced by normative, institutional, and structural context that led to a high level of work-life and work-family life imbalance. The reconciliation of the different life spheres occurred under high-level labour market and workplace uncertainties that – along with the aimed/expected goal to undertake the majority of childcare and household tasks at home – marked different life courses for women than men. Gendered social pressure regarding parental leave norms sent different messages towards them; their male-dominated profession required a short, while the wider society expected the traditional long parental leave period that made the reconciliation of work and motherhood particularly challenging. Even flexible working arrangements traditionalised these students’ gender roles and responsibilities even in the quite gender-balanced field of chemical, environmental and bioengineering.

As a result, a typical career pattern of female and male life courses outlined in the research; women opt for positions in the public sector that was perceived more family friendly than employment in the private sector, meanwhile men rather pursued careers in the better paid private sector in order to be able to take care of the family. Women in this research already accepted, therefore reproduced this gendered life course pattern, for they felt they have to choose between career and family. It is a question whether their resiliency they might developed during their early career would be able to retain them in science. It is also a paradoxical and even tragical situation that

while these women postpone their motherhood due to their careers – plus confront their internalised social norms, risk their own and their babies' health as well as their fertility plans, and also bear the stigmatisation of careerist women –, that, after becoming mothers, not having other options, they tend to give up that selfsame career.

It is another conclusion that life courses of these female PhD-students in engineering are more gendered due to their further intersection with the unique barriers of the male-dominated STEM fields. Women's exclusion and isolation in STEM fields had adverse effects on their research productivity, which further weakened their capability to strive for a better balance both in doctoral schools and in the labour market. Electrical and informatics engineers, moreover, tended to disregard – or did not recognise – prejudice and biased practices in their male environment, which does not challenge the dominant culture of universities and companies in STEM fields. In the field of engineering and the environment was particularly chilly for electrical and informatics engineers. The essential role of women had already clashed with the role of working women, but they met further and different stereotypes in their male-dominated environment regarding their roles and knowledge. WLB of these women were more challenging in the very chilly environments electrical and informatics engineers experienced. Though most of them socialised in families with long traditions in engineering, and they could have developed a certain level of resiliency during their academic career, these factors did not prevent the difficulties that continued in PhD education or even in employment. Laboratory work with hazardous substances is also gendered, for it curbs the timing of childbearing for women and also because of the health risks it implies.

The last conclusion is that these female PhD students were left alone with their dilemmas and in their struggle for WLB and career advancement. PhD students did not receive systemic support from their organisations, moreover, institutions tended to shift almost all responsibility to them even in the case of the usage of laboratory work during pregnancy. Women engineers also could not seek support from senior women, for there is a lack of female role models in the profession. Though they developed different coping strategies in order to enhance the reconciliation of their work and life, these strategies were not well-developed or formalised coping strategies, and they also stretched women's mental and physical limits. If female PhD students socialise in a way that their struggle for WLB is their own choice and responsibility, it is not surprising that they do not seek organisational support.

In sum, if barriers introduced above are not eliminated, it would strengthen and reproduce the already gendered life courses in STEM fields. Women's negative experiences as early as PhD education will also contribute to women's slow career advancement or their abandonment of science. It is also worth considering that in Hungary, women's lowest proportion and their negative experiences occur in that field of science (engineering), which employs both women and men in the highest numbers within R&D. Namely, the majority of women researchers work in highly gender unequal environments. This inequality is likely to continue to alienate women from pursuing an engineering career, particularly in the private sector, where their proportion is already at its lowest.

### ***Academic and policy contributions***

Present findings can contribute to different academic discourses both in the international and the Hungarian contexts: firstly, to *work-life balance research*, because it targets the WLB of top-educated professionals with an explorative qualitative method and the gender perspective; secondly, to *life course approach*, because it applies

qualitative method at mezzo and micro levels with the aim to find answers for the “why”. Thirdly, to *women in science research*, because it examines a single STEM discipline, where the proportion of women is the lowest; highlights gender- and occupational-based differences even within the discipline; and also targets health risk as a barrier to WLB. It is also quite a novelty that the negative effects of male-dominated environment are linked to work-life balance issues. In addition, the research findings would also chime with topical issues, such as risk society, and the *casualisation of academic work* and the *future of the university*.

Regarding the social relevance of my research, achieving a more balanced participation of women in science is more than an issue of mere social justice. Meanwhile, retaining top-educated, talented women in STEM occupations and avoiding significant losses in human, cultural, social and economic capital is a common social goal – especially in our new era of knowledge-based societies, where the increasing lack of professional labour force can partly be overcome with women’s increased participation. Increasing the proportion of women in STEM fields also would allow equal opportunities for professional success and enhance the overall well-being of working women. These goals are all in harmony with prime strategies and intervention points of the EU and other western governments. Eliminating the barriers also can help women to realise their fertility plan, which is another focal point of ageing societies in Europe.

The present research also identified intervention points for stakeholders. Though some of the phenomena discussed above are relevant in other stages of education or academic career, they should be handled with more attention in the case of PhD education. It is at the threshold of an academic research career and socialisation in doctoral schools determines attrition rates and also PhD students’ future capabilities and choices. For universities it is worthwhile to consider creating a more supportive environment for students particularly in male-dominated disciplines or departments, which would facilitate the WLB of women (and also men’s) and decrease attrition rates. There is a need at least for a) to decrease students’ non-PhD-related tasks; b) to offer a calculable early-stage career in forms of more extended or permanent contracts; c) to foster gender-awareness and equality in the organisations by at least having a carefully developed and implemented gender equality plan with particular attention to family issues and discrimination; d) to have up-to-date and widely published regulations regarding laboratory work – particularly discussing health-related issues that are to be followed consistently.

### ***Limitation and future research***

It is a limitation of the research that though it included enough cases of young mothers in chemical, environment and bioengineering, results cannot shed light on the personal motherhood experiences of electrical and informatics engineers. Meanwhile, the difficult access to (or the lack of) PhD student mothers in this highly male-dominated field, as well as the results of the present research verify the need for a deeper inquiry into their WLB, perhaps at later stages at their careers. In my next research I will aim at exploring the work-life balance, persistence and career strategies of young female researchers in fields where their representation is extremely low, and also in different sectors of employment. Another limitation is that the decision on the timing of childbearing is a very complex research area and this investigation focused on a narrow segment of it, based on individual perceptions. In the future, surveys on PhD students, as well as on doctorate holders would fruitfully contribute to the issue. It would be also worth examining more deeply the WLB of both genders during PhD education by applying recent

more complex theories, such as the agency and capabilities approach (Hobson et al. 2011), that encompass institutional, individual and societal factors.

Finally, the findings of this present qualitative research with small sample size cannot be widely generalised, particularly not on the macro-societal level. However, the explorative qualitative research design did allow the collection of a wide range of information on young female engineers, and the sample is eligible to describe the main patterns, which all lead to deeper knowledge of this under-researched area. Results can help to highlight and understand dilemmas and strategies of not just female PhD students but of young female professionals in general, particularly those studying and working in male-dominated environments and/or laboratories.

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## 5. OWN PUBLICATIONS

### IN ENGLISH LANGUAGE

#### **Bookchapters**

- Tardos, Katalin – Paksi, Veronika (2021) What do equality plans reveal about workplace equality and diversity in higher education and research performing organisations? – A content analysis approach. In Tardos, Katalin –Paksi, Veronika – Fábri, György (eds.) (2021) Tudományos karrier a 21. század elején. Szeged: Belvedere Meridionale, 277-292.
- Paksi, Veronika – Groó, Dóra (2019) Women in science – in Europe and Hungary. In Fazekas, K; Szabó-Morvai, Á (eds.) *Labor Market Yearbook 2018*. Budapest, Hungary: Institute of Economics, Centre for Economic and regional Studies, Hungarian Academy of Sciences, 69-70.
- Paksi, Veronika (2015) Work-life balance of female PhD students in engineering. In: Pusztai G, Engler Á and Markóczi RI (Eds) *Development of Teacher Calling in Higher Education*. (Felsőoktatás és Társadalom 5). Nagyvárad-Budapest: Partium Press-Personal Problems Solution-Új Mandátum, 179-194.
- Acsády J – Biegelbauer A – Somogyi B – Paksi, Veronika – Szalma I (2012) (De)valuing care: Traditional and alternative patterns in the social construction of care in Hungary after the transition. In Krassimira Daskalova, Caroline Hornstein-Tomic, Karl (Eds.): *Gendering post-socialist transition. Studies of changing gender perspectives* Kaser, Filip Radunovic. Berlin, Münster, Wien: LIT Verlag, 119-149.

#### **Articles in referred journals**

- Paksi, V – Nagy, B. – Tardos, K. (2022) (*accepted for publication*) Perception of Barriers to Motherhood: Female Phd Students' Changing Family Plans in the STEM Fields. *Social Inclusion* (IF: 1,333)
- Herke, Boglárka – Kutrovátz, Kitti – Paksi, Veronika – Ivony, Éva (2021) Career types and career satisfaction among sociology doctoral graduates of Corvinus University. *Corvinus Journal of Sociology and Social Policy*, 12(1): 29-50.
- Tardos, Katalin – Paksi, Veronika (2018) Diversity Management and Gender Equality Outcomes in Research, Development & Innovation Organisations: Lessons for Practitioners. *Szociológiai Szemle*, 4:166-190.
- Tardos, Katalin – Paksi, Veronika (2018) Academic careers and the value of the PhD degree: An introduction to the Special Issue. *Kultúra és Közösség*, 49(4):5-11.
- Paksi, Veronika – Tardos, Katalin (2018) Networks in science: Women's research collaborations and the old boys' club. *Kultúra és Közösség*, 49(4):39-48.
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- Géring, Zsuzsanna – Király, Gábor – Paksi, Veronika (2014) 50 years of sociology in Hungary. Report on the joint anniversary conference of the Hungarian Sociological Association and the Institute for Sociology of the Centre for Social Sciences of the Hungarian Academy. *Corvinus Journal of Sociology and Social Policy*, 5(1): 163-166.
- Paksi, Veronika – Szalma, Ivett (2009) Age norms of childbearing. Early, ideal and late childbearing in European countries. *Review of Sociology* (of the Hungarian Sociological Association), 2: 57-80.

#### **Report**

- Füleki, Katalin – Groó, Dóra – Kleinheincz, Ferenc – Paksi, Veronika (2018) Country Note Hungary. EFFORTI Project, Horizon 2020 – Science with and for Society (SWAFS).

#### **Conference proceedings**

- Paksi, Veronika – Király, Gábor – Nagy, Beáta (2017) Risks and motherhood-related uncertainties during PhD studies in engineering. *Proceedings of the 16th Annual IAS-STC Conference on Critical Issues in Science and Technology Studies*. Graz, Austria.
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- Tardos Katalin – Paksi, Veronika (2021) The value of equality in the public R&D sector and the prospects for its strengthening. *Karrier a kutatás-fejlesztésben: egyenlőtlenségek a munkaerőpiaci lehetőségek, a személyes kapcsolatháló és a munka-magánélet egyensúlya tekintetében c. konferencia*. ELTE – TK – MTA KIK, Budapest, Hungary
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- Paksi, Veronika (2014) The timing of PhD attendance and the first child in the field of engineering. Nationhood in the Carpathian Region. Hungarians and their Neighbours – Sociological Perspectives. Joint Conference of the Hungarian Sociological Association and the Department of Sociology and Social Work in Hungarian of Babeş-Bolyai University. Kolozsvár, Romania
- Paksi, Veronika (2014) Why are there so few women in science? Introduction to the leaky pipeline research. Women in Science. Tips, Tricks and Answers. Skill Training for Young Scientists. Postgraduates' International Network. PI-NET Conference. Budapest, Hungary
- Paksi, Veronika, Szalma, Ivett (2009) The age norms of childbearing in European comparison. 9th Conference of European Sociological Association. Lisboa, Portugal (also full paper)
- Paksi, Veronika (2008) Academic career of women and men in the field of natural science: work-life balance and the obstacles to professional progress. Annual conference of the Hungarian Sociological Association. University of Veszprém. Veszprém, Hungary (also full paper)

### Posters

- Paksi, Veronika (2015) Work-family balance of PhD students in the field of engineering. European Sociological Association. Prague, Czech Republic
- Paksi, Veronika (2014) Ph.D. and childbearing? Education and work-life balance of Ph.D. students. European Population Conference 2014. Biennial Conference of the European Association for Population Studies (EAPS). Corvinus University of Budapest. Budapest, Hungary

### IN HUNGARIAN LANGUAGE

#### Books

- Tardos, Katalin – Paksi, Veronika – Fábri, György (Eds.) (2021) Tudományos karrierök a 21. század elején. Szeged: Belvedere Meridionale.
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- Paksi, Veronika (2018) Miért kevés a női hallgató a természet- és műszaki tudományi képzésekben? Nemzetközi kitekintés a „leaky pipeline” metaforájára. In Nagy, Beáta – Géring, Zsuzsanna – Király, Gábor (Eds.) *Dilemmák és stratégiák a család és munka összehangolásában*. L'Harmattan Kiadó, Budapest, 56-79.
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- Paksi, Veronika – Géring, Zsuzsanna – Király, Gábor (2014) A globalizáció különböző arcai: dezorganizáció, hálózat és bizonytalanság. In: A. Gergely, András (Ed.): *Sorsfordulók. Üdvözlőkötet Róbert Péter 60. születésnapjára*. Politikatudományi Tanulmányok 2014/2. MTA TK PTI, 260-279.
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### Articles in referred journals

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Editorial board member, Kultúra és Közösség (Culture and Community, Hungarian periodical) from 2007