Entitled to a Sustainable Career? Motherhood in Science, Engineering, and Technology

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Journal of Social Issues

Abstract

Sustaining careers and motherhood are particularly challenging in highly masculinized science, engineering, and technology (SET) sectors. We explore this issue using a social comparison theory perspective, drawing on interviews with professional engineers and scientists from four companies, located in Italy, France, and the Netherlands. We examine how decisions to reduce working hours are influenced by perceived ideological, normative, and policy contexts. Despite contextual differences in opportunities and perceived entitlements and supports for family-friendly working hours, we found that sense of entitlement to do so without forfeiting career progression is limited across all the contexts. This attests to the enduring power of gendered organizational assumptions about ideal SET careers. Nevertheless we present examples of three women who achieved senior roles despite working reduced hours and discuss combinations of conditions which may facilitate sustainable careers and caring roles.

The challenges of sustaining motherhood and careers tend to be difficult in male-dominated occupations and organizations. This is particularly so in science, engineering, and technology (SET) companies where women are underrepresented, especially at more senior levels (European Commission, 2006). Many women leave after having children or remain in employment but fail to progress; part of the SET "leaky pipeline" from which girls and women drop out at different stages of their education and careers (Blickenstaff, 2005). Masculine values and work cultures are often entrenched in SET (Barnard, Powell, Bagilhole, & Dainty, 2010). Women scientists

and engineers often conform to cultural expectations of constant availability and periods of time working abroad in order to manage the additional burden of maintaining both their identity as women and their own professional identity as scientists, engineers and technologists—an in/visibility paradox (Faulkner, 2009). However, this often becomes unsustainable once they become mothers (Ranson, 2005). Indeed it is motherhood rather than gender per se that tends to be a key barrier, perceived as incompatible with normative SET professional careers (Herman, 2009; Herman, Lewis, & Humbert, 2012; Lewis & Humbert, 2010). This reflects wider evidence of a motherhood wage penalty (Budig & Hodges, 2010; Correll, Benard, & Paik, 2007).

Work–family policies to support parents (mostly mothers) by providing shorter or more flexible hours exist as national entitlements, to various degrees, across Europe and are also initiated within organizations. However, while these policies can help women to sustain employment and conform to normative beliefs about mothering, there are often negative career consequences (Webber & Williams, 2008). Work–family policies, especially nonstatutory initiatives, are often regarded as concessions and hence many women accept trade-offs between flexibility to deviate from normative (male) working patterns and career outcomes (Kelliher & Anderson, 2010). This raises questions about how and under what conditions women (and men) in SET can sustain careers as well as care for children. There has been some discussion of what might be considered to be socially sustainable work (Lewis, Gambles, & Rapoport, 2007), usually defined as work that enables social reproduction and care for future generations. However, in this article we consider sustainable careers, not just in terms of being able to continue in employment, but also to achieve career advancement commensurate with human capital, as SET professionals. This article focuses on women's career-related decisions in diverse contexts and explores some conditions under which mothers in SET may be able to deviate from male career patterns without forfeiting developmental careers. It does so by drawing on a qualitative study of SET professionals in four organizations in three European countries (France, Italy, and the Netherlands), undertaken via a European Union Expert Group on Women in SET, involving collaboration between SET employers and researchers.

Theoretical Background

Career-related decisions at the transition to parenthood, particularly whether to work reduced hours, are often discussed within a discourse of choice and preference (Hakim, 2002), taking an *individual* approach. Indeed mothers often rationalize their decision to work fewer hours as a personal choice, knowing that it will disadvantage their careers (Lewis & Humbert, 2010; Webber & Williams, 2008). However, this neglects the role of structural and relational factors and the importance of embedding individual agency and choice in specific institutional and cultural settings (Hobson & Fahlén, 2009). As Hantrais and Ackers (2005, p. 210) note, "Choice is something complex and elusive that emerges from the constraints, opportunities and ideologies of a particular time and place." The individual approach, with its neglect of context, fails to explain why cutting back on work during early motherhood has negative career outcomes.

A more *contextual* approach focuses on workplace policies, cultures, and practices including discrimination against mothers on the basis of motherhood as a status characteristic distinct from gender alone (Correll et al., 2007; Ridgeway & Corell, 2004) and particularly gendered organization theory (Acker, 1990). Many European SET employers now offer a range of work–

family policies, usually targeted at least implicitly at mothers. These include reduced hours arrangements negotiated to enhance retention of highly qualified women in posts that are usually full-time. These policies are often presented as offering mothers choices to be able to sustain their careers. However there is abundant evidence that part-time work even in occupations requiring high levels of human capital tends to be career limiting, both in SET and more broadly (Webber & Williams, 2008), particularly in highly competitive career contexts (Cross & Linehan, 2006). Although some writers have argued that part-time jobs in other elite occupations may challenge ideal worker norms, transforming workplaces for women and men (Blair-Loy, 2003), most research suggests that entrenched and gendered ideology of the importance of availability and visibility can obscure what is often the greater efficiency of those achieving their outputs in shorter hours (Lewis, 2010; Lewis & Humbert, 2010).

Research on the gendered nature of SET and gendered organizational assumptions sheds some light on the processes whereby working shorter hours during the early years of motherhood compromises careers. There are a number of common gender-related cultural practices in SET industries, including language, informal banter, and social networking patterns which signal that women are outside the norm (Faulkner, 2009) and mysterious career paths and systems of risk and reward often reflected in professional women's stalled progress at mid career (Hewlett et al., 2008), attesting that these workplaces are far from gender neutral. More broadly, gendered organizational theory highlights widespread gendered assumptions about ideal workers, particularly professionals, who work full time and often excessive hours, are constantly available and visible and do not allow family to interfere with their working time (Acker, 1990; Holt & Lewis, 2010). This conflation of ideal workers with hegemonic masculinity (Bailyn, 2006) is particularly strong in the highly masculinized world of SET (Miller, 2004) and especially in industries where there is an expectation of mobility and frequent international travel (Ackers, 2004). The ideal worker norm is antithetical to the way the ideal mother is socially constructed in many contexts (Lewis, 1991; Ridgeway & Correll, 2004). Gendered organizational theory contributes crucially to an understanding of organizational processes that systematically disadvantage women, especially mothers and undermines capacity to sustain career and care. However although this approach highlights processes for working toward systemic workplace change (Rapoport, Bailyn, Fletcher, & Pruitt, 2002), it does not clarify how individual women trailblazers might deviate from traditional SET career patterns without forfeiting developmental careers. Moreover, research on motherhood as a status characteristic and on the impact of workplace culture and practice often neglects the impact of national context, implicitly assuming universalism, despite variations in national policies and normative beliefs about parental roles. Some recent research highlights the importance of layers of context, including both workplace and wider national contexts for understanding tensions relating to parenthood and careers (Hobson & Fahlén, 2009) and there are calls for wider contextualization of research in this area (Powell, Francesco, & Ling, 2009).

A third approach that specifically takes account of both *individual cognitions and context* is based on social comparison theory and especially the concept of sense of entitlement. Drawing on social justice theory a distinction can be made between supports which are expected and regarded as entitlements or rights, and those which are regarded as favors which have to be negotiated and/or reciprocated. Sense of entitlement, which differs from objective entitlements, denotes a set of beliefs and feelings about rights, entitlements, or legitimate expectations, based

on what is perceived to be fair and equitable (Bylsma & Major, 1994; Major, 1993). In the case of working parents, this shapes outcomes that mothers and also fathers feel entitled to expect in the workplace and elsewhere (Lewis & Smithson, 2001). In the context of gendered ideal worker assumptions, mothers often view work–family policies that enable them to deviate from full-time work, as favors. This shapes and is shaped by a low sense of entitlement and can explain why mothers are often willing to trade-off time with family for career progress (Webber & Williams, 2008).

Sense of entitlement is theorized as determined by social comparison processes (Lerner, 1987), and constructed on the basis of social, normative, and feasibility comparisons (Lewis & Smithson, 2001; Lewis & Haas, 2005). Judgments about what is fair or equitable are made on the basis of normative comparisons with social comparators, that is, those who are assumed to be similar to oneself (Bylsma & Major, 1994; Major, 1993). Gender appears to be particularly significant in influencing what is perceived as normative, appropriate, and feasible. Research has consistently shown that men and women tend to feel entitled to different outcomes in employment, where, for example, women may feel entitled to lower rates of pay or other rewards (Bylsma & Major, 1994). If motherhood is socially constructed as a woman's primary role then employment is often viewed as something that women undertake for their own satisfaction and independence, even if their income is essential for the family (Lewis, Kagan, & Heaton, 2000). Ideologies of motherhood embedded in workplace and in national cultures are therefore likely to impact on mothers' sense of entitlement to employer support that will enable them to work when they have family responsibilities, and also to men's (lower) sense of entitlement to employer support for involvement in caring. There is some evidence that sense of entitlement is also influenced by aspects of national contexts including social policies and the cultural values that they reflect (Lewis & Smithson 2001; Lewis & Haas, 2005). However, previous research exploring sense of entitlements has not examined sense of entitlement to both flexible/part time work and career progression. Nor has it looked specifically at traditionally masculine workplace cultures such as the SET industries.

Role models are important in providing social comparisons. If there are few, if any, organizational role models of women who modify working patterns for family and sustain career progression, social comparisons result in perceptions that this would be neither normative nor feasible. Thus fewer mothers are likely to feel entitled to deviate from ideal career patterns without career disadvantage. However, this still does not explain why or under what conditions women trailblazers can become social comparative referents for achieving career progression without conforming to normative male career patterns.

Thus previous research has explained women's lack of career progression in SET in terms of individual decisions about using work–family arrangements at the transition to parenthood, and also in terms of contextual factors including the disadvantaging role of social perceptions of motherhood status itself and gendered organizational cultures which marginalize and penalize those who deviate from traditional linear careers. The impact of wider national policy and normative contexts has received less attention, although there is some indication that this influences sense of entitlement to use work–family arrangements. However, much less is known about sense of entitlement to use work–family arrangements without career detriment, and about the conditions under which mothers in highly gendered organizations can forge trailblazing

careers without forfeiting time for care, even without obvious social referents. This article addresses these gaps, using sense of entitlement as a conceptual lens for exploring individual, contextualized experiences of motherhood and careers in four SET organizations in three national contexts. As the transition to motherhood is a key turning point, with the impact of decisions made at this time often manifested in stalled progression by mid career, we therefore look at SET professionals' accounts of both career/life course phases. The main objective is to further understand mothers' lack of progression in SET. Specifically the aims are:

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  To examine the ways in which mothers (and some fathers) talk about decisions concerning working hours at the transition to parenthood. We explore (a) how SET professionals define their situations in terms of their perceived sense of entitlement to modify work for family and at the same time develop sustainable careers, and (b) how perceptions of national contexts, including social policy and normative parenting beliefs, contribute to shaping their sense of entitlement to sustainable careers.

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  To examine, as careers unfold in diverse national contexts, the conditions under which some women scientists and engineers are able to make use of work–family arrangements without accruing career penalties, and may thus increase the pool of social comparators for SET careers that deviate from the male norm.

Method

Background

The study derives from a project carried out in 2007–2009 as part of the EU Women in Science and Technology project: WIST2 (European Commission, 2009). An earlier EU research program identified the "leaky pipeline" and "work–life balance" as areas for further investigation into the reasons for women's under representation and limited progression in SET employment in Europe (European Commission, 2006). WIST2 brought together a panel of researchers with representatives of European SET companies, all of whom had identified an organizational need to retain and develop more highly qualified women SET professionals. The remit of the group was to identify relevant research areas and to carry out investigations to support companies in addressing the problems of attrition and women's stalled career progression in this sector within their own organizations. The companies provided access to existing data and/or suitable research participants. This article brings together the results of two linked studies carried out within the overall WIST2 project.

Design and Methods

A qualitative approach was adopted, using semistructured interviews to explore the lived experiences of parents as they negotiated motherhood and in some cases fatherhood, in the context of their professional lives as engineers and scientists. Thus our focus is on situated

meanings and how these are constructed by participants (Gephart, 2004). A process of negotiation between the researchers and the company representatives led to a commitment by seven of the companies to provide study participants. As there were only one or two interviews in three of the companies, we focus here on the four remaining organizations with 8–13 interviews in each. Although the two interlinked studies used aspects of the same, collaboratively developed, interview schedule, the priorities of the companies involved resulted in slightly different foci. Both projects addressed career issues, but one focused on the impact of the transition to motherhood and the other on experiences of work–family policies and practices (European Commission, 2009). Consequently, one sample was all women while the other included some men. Companies were asked to recruit professionally qualified scientists or engineers with children ranging from under a year old to secondary school age.

The interview schedule took a life course approach, focusing on career history, decisions, and turning points in working lives and expectations and actual experiences of support to sustain career and family. Discussion covered use and experiences of work–family practices including periods of leave, flexible working, and reduced hours work within the company or of working full-time. The interviews lasted about 1 hour and were recorded, transcribed, and translated as appropriate. Most interviews were conducted in English although some were carried out in French. In this article, we analyze the experiences of 30 mothers in three countries, as well as eight men from two French companies (see Table 1).

Table 1. Participant Nationalities and Working Time Patterns

Country	No of cases	Women	Men	Full-time[a]	Part-time

1. [a]These figures reflect contracted working patterns at the time of interview but many of now working full time had periods of working part time in the past.

	Country	No of cases	Women	Men	Full-time[a]	Part-time
Company1	NL	8	8	0	3	5
Company2	Italy	8	8	0	7	1
Company3	France	13	9	4	5	8
Company4	France	9	5	4	6	3

Procedures Used for Coding and Analyzing

A coding scheme was developed between the two authors with general headings. These included professional identity (career history, ambitions and aspirations, work patterns) discourses of expectations and choice, organizational culture (progression/stagnation, attitude to motherhood, gender biases, ideal workers, flexible work options, leave arrangements, in/visibility paradox), motherhood (motherhood ideologies, childcare arrangements, domestic arrangements), and national cultural practices. The transcripts were then coded using Nvivo8 software, a qualitative data analysis tool that enables coding, linking, modeling, and annotation of rich textual data. An inductive approach was used to identify further emerging themes and we exchanged Nvivo coded files and discussed our coding at regular intervals to ensure intercoder reliability.

Setting

All the organizations are large multinationals in the highly masculinized SET sector, including one pharmaceutical, one energy, and two oil and gas companies. All four had concerns about the lack of progression of their women employees and two had already instituted well-developed training and development initiatives to address these issues. However, in only one of the companies were there any highly visible senior women. The two French companies were alike in many ways but also diverged in some respects which allowed us to explore and compare experiences within workplace as well as national layers of context.

All the companies are subject to EU Directives including those on parental leave and on equal treatment for part time workers, which set parameters for policy at the nation state level. However, although the principle of equal treatment of part-time and full-time workers is accepted in terms of working conditions in European law, it is more difficult to enforce equal career progression. Moreover, the ways in which directives are implemented and subsequent opportunity structures vary considerably across Europe (Den Dulk & van Doorne-Huiskes, 2007), influenced by factors such as labor market conditions, availability of day care, attitudes toward parents' involvement in work and care, and partner support (Kangas & Rostaard, 2007). In each of the three national contexts there were subtle differences in normative ideologies of motherhood, but all resulted in gendered patterns of part-time work where this was available.

Among the countries in which the participating organizations are located, French mothers have the fewest objective external constraints to integration of work and family. French social policy is designed to provide parents (mostly mothers in practice) with formal entitlements to and support for combining family responsibilities and employment, including childcare support, the right to work part-time and generous family leaves. Policy is based on a dual-earner family model, but with mothers as the main carers (Fagnani, 2009). The ideal French mother expects and is expected to work and be the principle carer, with supporting resources such as childcare. There is no stigma in delegating childcare to the state (Hantrais & Ackers, 2005). Furthermore full-time working hours tend to be shorter in France than elsewhere and reduced hours working is common, mostly for mothers.

In the Netherlands, a one and a half earner family is the norm for parents of young children and part-time employment has long been promoted by the state as a work–family strategy. However, normative beliefs about parenting are strongly gendered. While mothers who combine work with family care are viewed positively, fathers who do so often suffer career penalties (Vinkenburg, Van Engen, Coffeng, & Dikkers, 2012). Most mothers (and some fathers) work part-time during their children's early years, supported by a mix of private and state childcare provisions (Cousins & Tang, 2004). This reflects the strong preference for care at home for young children (Den Dulk & Van Doorne-Huiskes, 2007). In Italy, by contrast, the norm is for full-time work for men and women. Although maternity leave is generous with some flexibility available in working hours during the first 3 years, there are few part-time work opportunities for professionals and public childcare is limited. Instead there is a tradition of extended family especially grandmothers, providing considerable support (Del Boca, Locatelli, & Vuri, 2005).

Results

For professional scientists and engineers in these companies, there were no existing part-time posts or career routes, rather these were negotiated on an individual basis. In the French companies this was a formal entitlement and in one company a collective agreement allowed a reduction from full-time (35 hours) to 32 hours over 4 days, with favorable conditions. In the Italian company part-time work was a concession that only one participant had negotiated. Other Italian mothers relied on extended family members to provide childcare support in order to sustain full-time careers. In France and the Netherlands, reduced hours contracts comprised options for working 3 or 4 days per week although some worked reduced hours over 5 days. In addition, most of the mothers on full-time contracts in the four sites limited the amount of time they worked beyond their contracted hours, although extra hours were expected to a greater or lesser degree across all the companies. These mothers were thus regarded and also regarded themselves as working reduced hours compared with the norm and so they are also included in our analysis.

Below we first explore parents' accounts of decisions about working hours and their explanation, in terms of social comparisons, norms, and feasibility, within the context of national and workplace policies and norms. This qualitative study does not, of course, aim to make cross-national generalizations, but rather to explore how parents used their own perceptions of normative values and cultures to understand and make sense of their particular life and career choices and the consequences. Details about the participants we have quoted are in Table 2. Their citations were chosen as representative illustrations of themes identified across the whole sample. We then explore the experiences of three mothers who progressed in their careers, focusing on some conditions under which it is possible to sustain career progress without working full time during early motherhood.

Table 2. Details about Cases Quoted in the Text

Identifier	Occupation	Country	Current working hours[a]	Career length (years)	Age	No of children	Age of youngest

1. [a]These figures reflect contracted working patterns at the time of interview but many of those working full time had periods of working part time in the past.

Identifier	Occupation	Country	Current working hours[a]	Career length (years)	Age	No of children	Age of youngest
Tineke	Senior Manager	NL	3.5 days	20	43	2	10
Pierre	Research Chemist	France	Full time	15	38	2	2
Marie	Project Manager	France	3 days	12	38	3	1.5
Soraya	Devt Manager	Italy	Full time	15	41	1	5
Sabine	Research Manager	France	4 days	9	35	2	<1
Isabella	Engineer	Italy	On leave	10	34	1	<1
Helene	Deputy Director	France	Full time	15	38	3	4

Table 2. Details about Cases Quoted in the Text

Identifier	Occupation	Country	Current working hours[a]	Career length (years)	Age	No of children	Age of youngest
Els	Senior Manager	NL	Full time	20	42	3	8
Sophia	Engineer	Italy	On leave	5	33	1	<1
Anna	Research Engineer	France	4 days	13	37	3	1
Carlotta	Engineer	Italy	Full time	18	46	1	8

Working Hours, Sense of Entitlement, and National Context

Mothers' working time decisions after maternity leave, whether formally working reduced hours or continuing full-time but limiting their extra availability, were usually framed as *choices*, but it was clear that these were not unfettered compromises. Their explanations often included discourses about national contexts. In particular, they drew on normative gender and parenting roles as well as availability of childcare and extended family support.

Among the French mothers support for continued employment was taken for granted, although those who had worked on assignments elsewhere were more sensitive to the impact of national context. Sabine, who had worked in both Germany and France, was able to locate her sense of entitlement to work–family support in social comparisons based on cultural ideological difference. Similarly to perceptions of mothers in Okimoto and Heilman's (2012) study, she faced additional stress by having to combat assumptions about her parenting role. In this extract she notes the disapproving voice of normative German motherhood ideology (which labels women who "neglect" their children as Rabenmutter or "raven mothers").

I've been living for six years in Germany and have recently moved back to France because the border is very nearby – I have experienced that other women (in Germany) who are not working and looking after their children until they are at least three, they would look at me as a very bad mother – how can you leave your child with a nanny at three months old?[…] That was fine by me because since you have the French culture from the beginning I was self confident to do it but I can understand the pressure for German women.

However, this did not mean that French mothers wanted to or felt entitled to conform to the male model of work. Rather, the strong ideology of mothers as the main carers underpinned decisions to reduce contracted hours or limit extra hours. There was a frequent discourse among the French mothers, and also some of the Dutch mothers, of "choices" made to avoid "sacrificing" children, albeit alongside recognition that not all mothers are the same in this respect, as Anna describes.

I know that some people come back from work when their children are in bed. I don't want to do that. I want to see them, to give them dinner, to bath them, to put them to bed every night. It's inconceivable not to do so. I would never sacrifice my children. It's a choice. There are a lot of people who come home too late in the evening. But that's their choice.

Social comparison discourses were also used by mothers working full-time to justify their decision making, for example, discussing the extra material benefits of having two working parents, redefining traditional notions of the good mother.

Mothers in the Dutch company also had a strong sense of entitlement to work part-time which was viewed as normative and feasible, despite a less well established infrastructure of support than in France. Some had considerable partner support. Fathers were involved in childcare to a greater or lesser degree in all the companies but there were only a few cases where mothers talked of partners actually working part-time in order to be involved in childcare. For example, Els' husband worked 4 days a week when they first had children 15 years ago, which was still quite exceptional within their social circles at the time. Now she believed that Dutch fathers see it as more feasible, if not yet normative to reduce their working hours, suggesting an emerging sense of entitlement for men to do so and mothers to expect this support. Here she describes how other people have reacted to her husband's childcare role:

Now everyone's used to it, but before it was 'are you ill?', 'are you taking a day off?', 'has your wife asked to look after the kids for the day?' … … [Now] it's changing a lot. [There are] many men at the school nowadays, or more men

In Italy where the choice for a mother is mainly between full-time or no employment there were few opportunities and little sense of entitlement to work reduced hours. For Carlotta, for example, despite a strong ideology of motherhood this meant she was able to make a very positive social comparison.

If I do a comparison between me and other mothers who are completely dedicated to their children – I don't see that my son or their son is any different. He seems to be happy to have this type of family because he has the opportunity to travel with us and he understands that at home there is a lot of opportunity and me and my husband we speak about our jobs and our work and this is also good for my son

This may be possible because of the involvement of wider family in childcare. There are few expectations of nonfamilial support, but those who had worked abroad made social comparisons between national cultural norms. For example, Isabella, an Italian engineer, had spent 2 years working in Norway.

When I stayed these two years in Norway I saw a totally different reality, I'm not surprised that they have so many children compared to an Italian family because really the possibilities and the support that you have is completely different

This experience challenged her feasibility beliefs and raised her sense of entitlement to support from the company, although she was not optimistic about this actually materializing, in the Italian context.

Sense of Entitlement to Reduce Working Hours without Forfeiting Careers

Despite differences in national normative and policy contexts and childcare support, few of the women interviewed appeared to have a strong sense of entitlement to work shorter hours without giving something back in exchange; working harder or forfeiting career progression. Given the pervasive ideology of ideal SET careers with constant availability, most still regarded reduced hours as favors to be reciprocated, rarely associated with a sense of entitlement to career progression. This was usually viewed as neither normative nor feasible, although we discuss some exception in the next section. Social comparators were both real and ideological, that is, other mothers and the ideal SET professional. Low sense of entitlement was often reflected in willingness to condense a full-time workload in shorter hours, working at home or in the evenings to maintain productivity and for less pay, particularly in the French companies. This work intensification and financial penalty was understood as normative and an acceptable compromise, as Marie, for example, describes:

I asked to work three days a week and my boss asked me "are you sure you can make it?", so it was a bit of a challenge. Working three days a week, they could have given me a different job with less responsibilities, less autonomy. So I said "I work three days a week, I keep the project and I'll manage to make things work"

Yet despite greater efficiency in managing her workload, she, like most participants, believed that her part-time status would stall her career.

I want to do some management … ., but I know I can't ask for [promotion] while working three days a week.

The men in the two French companies were also entitled to reduce working hours. However, while some men worked 4 days a week in one company all reported that this was for reasons other than childcare and men interviewed in the other company did not feel entitled to take this option. For example, Pierre, although describing himself as a very involved father, explained:

It's not in the culture. There are two women in my team who work four days a week, but I don't know any man who does the same … .[…] it's also possible to work at home one day a week but men just don't. But it's not even discussed. … . If I had the opportunity to work one day at home, I could be ok, but if I had the possibility to work only four days I wouldn't do it. […] Because I don't have the time in five days to do everything I have to do. I'm not sure if I'm fully efficient … . and working four days would be even more complicated for me.

Pierre considered it neither normative for fathers to reduce working hours, nor feasible given his workload. He compared himself with other fathers and not with the mothers in his team, who, he acknowledged, organized their work differently.

Even mothers working full-time largely accepted that their reduced visibility relative to male colleagues' would limit their progression potential, as Lisette a French engineer explains:

It's true that if you work like a man, with the same hours and the same commitment, you can be promoted. But when you have a family, you can choose to spend more time with them, and when I say more time it's not a lot of time, it just means that you don't go back home at 8pm, which is

quite late for me. In this case, I don't think you can get the same position that men get. [I leave work] between 7 pm and 7.30 pm, and I start here at 8.30 am

While there were a number of women managers at mid management level in all of the companies, there were few visible as role models in senior management, limiting social comparators for sustainable part time careers. This was most acute in the Italian company with no visible senior women to challenge the established male culture. Nevertheless, awareness of how this is culturally constructed offers the possibility for social comparisons and change, as Sophia an engineer at the Italian company observes:

at the higher positions there are only men. It's true that also [women] started to be a considerable number just in recent years so maybe it's for the future generation, now there are more women in the company. There are older women in the company but they didn't get into management. It will start to be a common problem, someone needs to break through. In other companies (not in Italy) there are women higher up

Sustainable Careers after Motherhood

All the participating companies were motivated by the wish to gain competitive edge by improving retention and development of talented women scientists and engineers. Yet we have seen that it can be difficult to maintain a sense of entitlement to both a sustainable career and culturally acceptable models of motherhood in these companies. Below we discuss three mothers at mid career who despite a period of part-time work progressed into senior management, exceptionally sustaining both career and family life, and we explore some conditions under which this can occur even without other successful women as social comparators. These critical cases are selected because they appeared to be less likely than others to accept trade-offs. However, they also illustrate the complex and dynamic processes involved.

Tineke, one of the first woman engineers in the Dutch company 20 years ago, and now in a senior role, was proud of her achievements. In the absence of female senior role models, she cited her social comparators as male colleagues

I think you have to be realistic, if I compare myself to male colleagues who joined at the same time, I've done pretty well. A lot of them haven't and never will reach the level that I've got.

Tineke worked part-time since her children were born and her husband also worked reduced hours. In the Dutch context with widespread part-time work she had a clear sense of entitlement to work reduced hours, although in her company she was among the first engineers to do so. The national cultural context provided a counterbalance to the predominant organizational culture. Rather than trading-off career for reduced hours she believed her part-time status had a positive effect on her image within the company. Although she achieved that through being highly organized and with some work intensification, the possibility of a sustained career gradually appeared more feasible.

I saw [that] people admired me a lot because they couldn't understand how I could cope with the work and the kids. And I think that it also had like a positive effect on my career progression

because people were quite surprised with what I was still able to do in three days a week. And also I became more effective, more selective, not attending meetings where my presence was not really necessary. So I think it helped me to get promotions.

Later she became a single parent and she had to rethink the feasibility of a sustained career. However, the company's supportive attitude and willingness to offer flexible work solutions continued and she was able to negotiate a change in career direction in order to secure a job closer to home. Yet despite company support and her strong track record and esteem within the company Tineke seemed ambivalent about her entitlement to modify work for childcare and she endeavored to keep her childcare commitments as invisible as possible.

I just have recurring appointments at a certain time and I'm not going to put in that I have to collect my children. I refused a meeting, I've got an appointment, not everybody has to see that I'm leaving at that time because of my children.

Although Tineke viewed her career experience and progression as successful she still framed it as exceptional and fortunate given the prevailing belief within the company that career success requires continuous full-time work. It seems that a combination of the perception of reduced hours as normative in the national, although not the workplace context, support from her husband in the early years of parenting, and her determination to demonstrate that her ability and commitment were not compromised by part-time hours, which in turn elicited support from management, helped her to maintain a view that career progression, though not normative, was feasible even given difficult life circumstances.

Soraya, originally from North Africa but working in Italy, also viewed her trajectory as exceptional. She became a mother at the age of 37 when her career was already well established. This may have accounted for the strong support she experienced after maternity leave.

when I came back from the leave after a few months I had a salary increase to give me the power and to restart again. They told me that this was not common

The company helped her accommodate her family commitments by enabling flexible working, reducing the need for travel, and facilitating remote working.

In a year and a half I travelled only 3 times and my boss he understands this and he told me that if it's not strictly necessary we can manage with video conferences I can manage everything. … . So I can work also two hours today and ten hours tomorrow. … we use a lot of video conferences and teleconferences and online meetings – I stay till 7 o'clock when its needed but when it is not then no. I have the mobile PC at home so I can work at home. On Sunday I worked at home when my son was sleeping and when I am sick [if] we have something to do I will still work at home.

These arrangements contributed to her ability to progress to a senior level. She and her manager displayed mutual flexibility and like Tineke she also worked hard to communicate her dedication. Thus she was able to work reduced hours and flexibly until her son started school. Her line manager, in enabling her flexible and remote work, gave her a strong message about her continued value to the company and boosted her own sense of entitlement to her career success.

Nevertheless, there were contradictory messages about her potential to continue to rise to senior management, signaled by the total lack of senior women role models in the company, which caused her to adopt self-limiting beliefs.

Helene, a French mother of three also managed to demonstrate her efficiency while working reduced hours, earning the support of her manager. Her recent promotion to Deputy Director of her large research department led her to return to full-time work after many years working on a part-time contract. She explained that prior to her change of job:

I worked less, very much less. I never worked at home, or perhaps one evening in the week only … … . and my manager at this time was a man, and he always said that I was very efficient and he encouraged me take the job of Deputy Director because he said that you are efficient and you will manage to do that job with your family

The attitude of her manager before she was promoted was important, as it was clear from other participants that not all line managers recognized the greater efficiency of mothers condensing their work into 4 days. Also, she worked in research and development and the nature of the work may have lent itself more easily to flexible working than other SET jobs. This together with the fact that her new manager was a woman contributed to her belief that a sustainable career after reduced hours work was feasible and might even become normative. In her case the challenge was to convince senior colleagues of her ability, again by demonstrating commitment in ways congruent with the ideal worker model.

I had to work with the director of [the company], who is very likely to set the meeting early in the morning, and at the beginning I said to my husband I have to be available for this meeting. It's the first time I work with this man, I had to be available … .he wanted me to be at the meeting at 8 o'clock and I tried to say, not possible for me, and he said, no you have to be, you have to be. So I make a big effort to be at the meeting. And after two or three weeks, he saw that I was answering all his questions and I was doing the job he asked me and I begin to say 'I can't be here on the next morning', 'ok no problem' … … . When people are confident in your job, they accept that you are less available

In all three of the above cases, career success (indicated by ability to progress to senior levels) was achieved with strong intervention and encouragement from the company, in providing reduced hours and flexible working options where necessary in response to changing family circumstances over time. Mothers' sense of entitlement was facilitated and fostered by supportive managers, while individual solutions were framed within national contextual norms. Thus for Helene and Tineke, working part-time for a number of years was congruent with normative expectations of motherhood within French and Dutch national cultures, yet did not hamper their own career motivation and aspirations for promotion and career sustainability. They were able to intensify or decrease their working hours at different periods of their lives to accommodate changed circumstances. In Soraya's case where part-time working was less nationally acceptable, her career sustainability was achieved through technologically facilitated work flexibility. However, all had to work hard to prove they could "do it all."

Discussion

This article extends previous research on motherhood and SET and work–family issues more broadly, in three ways. First, while previous research tended to take either an individual or a contextual approach to understanding the leaky pipeline in SET, we combine the two by using sense of entitlement as a conceptual lens, based on social comparison theory to understand the career decisions and trade-offs made by these mothers (but rarely fathers) in diverse SET contexts. Second, we extend the body of contextual research by examining accounts of mothers (and some fathers) in SET in four organizations in three European national contexts varying in social policy and cultural norms. We do not make claims about how representative participants' perspectives are of broader national opinions and beliefs. Rather, the qualitative approach illustrates how individuals used their own perceptions of normative values and cultures to understand and make sense of their particular life and career choices and their consequences. Third, we address one of the potential limitations of a social comparison theory approach, that is the neglect of trailblazers who can provide new social comparators, by exploring the conditions under which some women were able to advance in their careers without adopting traditional male career trajectories or feeling they have compromised their time for care.

The findings show that career decisions after becoming a mother, and sense of entitlement to support for career and family roles, are strongly influenced by intersecting layers of national and workplace policy and normative context that shape what individual mothers perceive to be normative, feasible, and acceptable. However, despite contextual differences our main overall finding is that the evolution of mothers' perceived entitlements to be able to modify work for family reasons is rarely combined with a sense of entitlement to sustain career progression. This is a major stumbling block to mothers' career progression across the national contexts. Nevertheless, a minority of women scientists and engineers are able to modify work for family reasons without accruing career penalties. This seems to be facilitated by interrelated contextual and individual factors, as discussed later.

Entitlements and Norms Shaping Career Decisions

Research on work and family and organizational processes are increasingly criticized for the neglect of context (Bamberger, 2008; Powell et al., 2009), particularly cultural workplace and national beliefs and norms and national institutional factors. In this article we demonstrate that scientists and engineers in European companies, who are also mothers, make career-related decisions on the basis of both objective and subjective entitlements and cultural norms and that there are both similarities and differences across contexts.

The most fundamental influence on new mothers' decision making are norms of motherhood which both reflect ideology of the good mother and also underpin national social policy relating to employed mothers. Our data show that all the mothers engage with these norms whether they decide to reject or conform to them in some way. Gendered assumptions about mothers as the main carers and conflicting assumptions about ideal workers who are constantly available at work prevailed in all the companies, albeit with some differences in dynamics. For example, although the notion of the employed mother is embedded in French social policy and the French mothers have an infrastructure of support to enable them to sustain jobs, they are also aware of strong pressures to be the main carers in most cases. The same is true of mothers in the Dutch

and Italian companies, although the Dutch women interviewed appeared to have more sense of entitlement to partner support which could influence their career decisions.

Contextual factors and subjective, individual processes influence the ways in which mothers make sense of and reconcile competing social directives regarding ideal SET professionals and mothers and consequent career decisions. Contextual factors include the nature of work. Mothers' decisions to reduce working hours were somewhat easier in desk or laboratory based jobs than in roles requiring frequent overseas travel. Structural support include the availability of childcare (public or, in Italy, family based) for part time or full time work, family leaves, and especially the availability of part time work. Where part-time or reduced hours work is available and normative (in the Netherlands and the French companies) this enabled women to adopt a social practice that satisfies personal and societal ideologies of the good mother, albeit not the ideal worker. Other mothers in these contexts and in the Italian context, where the part time route was not available, redefined this ideal by working full time but reducing the expected extra hours.

These contextual factors influence sense of entitlement to support and yet there are individual differences in career-related decisions and trajectories which can be related to social comparison processes. Social comparators feeding into sense of entitlement to work less and/or progress in careers are both actual and ideological. Mothers usually compared themselves with other mothers in their company and/or country in terms of hours worked which reproduced normative patterns. However, SET professionals in international companies are often required to undertake overseas assignments. Those who have worked in other countries observed variations in ideologies of motherhood and work and the feasibility of different support available to employed mothers. Thus wider social comparisons helped them to articulate the socially constructed nature of work and family ideals and contributed to enhanced sense of entitlement to support for career and motherhood. However in terms of entitlement to career progression, available social comparators were those who advanced in their careers; predominantly men who conformed to the male ideal worker norm. With few if any role models of men or women who progressed in their careers despite reducing working hours when children are young, this was widely perceived as neither normative nor feasible. Supports that enable mothers to work in ways that are compatible with family life continue to be largely regarded as favors that must be reciprocated by tradeoffs in career terms. It is clear that gendered organizational assumptions about the need for continuous full-time career trajectories, visibility and availability and a career-primary focus which inherently conflicts with motherhood ideology are the major barriers to mothers' sense of entitlement to modify working hours and sustain careers. This is often so even when workloads are condensed rather than reduced, so it is visibility and availability rather than work output that are decisive. Furthermore, given the limited progression of mothers who worked full-time but without excess time beyond contracted hours, part-time work per se cannot fully account for mothers' stalled careers across the contexts and the possibility of motherhood status (Ridgeway & Correll, 2004) contributing to the leaky pipeline cannot be ruled out.

Conditions under Which Some Women Are Able to Advance Their Careers

While differentiation can be made between objective and subjective definitions of career success (see, for example, Hall, Lee, Kossek, & Las Heras, 2012), this study has focused on objective

criteria associated with career progression such as promotions. No simple recipe emerged for enhancing mothers' sense of entitlement to and actual career advancement after part-time work. However, various combinations of contextual and personal factors emerged from the cases of trailblazing mothers. In terms of individual processes these women were more likely than others to use male social comparators and expect similar career progression or to compare themselves with other women but focus on the (financial) benefits of mothers' careers to families, redefining good mothering. Partner support was also important both practically and also symbolically in the rejection of the norm of mother as main carer. Strategic approaches to "proving themselves" also helped, for example, becoming a mother later or demonstrating efficiency by traditional work patterns before asking to work less. This usually resulted in an intensification of work, but was regarded as an acceptable trade off. Nevertheless women's agency is limited by contextual factors. Other mothers also worked intensively to accomplish more in less time but their efficiency was not recognized by managers. The most important contextual factor appeared to be support and encouragement from management in communicating confidence in individual mothers and the feasibility of combining reduced hours and career progress. The availability of flexible or part time hours is important, but not sufficient without management supportiveness. In Italy where the option of part time work was not available, extended family plays a substantial role in childcare reducing the guilt sometimes associated elsewhere with substitute childcare.

Sense of entitlement is not static but reflects shifting contexts that provide new social comparators as illustrated by the evolving expectations of father involvement in care described by Dutch participants. As more mothers in SET organizations achieve career advancement despite periods of reduced working hours this could be reflected in a greater sense of entitlement for women scientists and engineers and perhaps also more men to sustain parenthood and developmental careers. However, the evidence from this study suggests that women who are able to do this tend to be regarded as exceptional rather than normative. In that case other mothers who compare themselves with high achieving women and do not define themselves as exceptional may feel less entitled to try to for similar outcomes.

Limitations and Implications for Further Research

While the study was qualitative and therefore seeking theory developments rather than generalizations, it is limited to some extent by the range of participants in terms of gender, sector and nationality. First, the number of fathers interviewed was very small. Although findings are congruent with other research on fathers' careers (Hobson & Fahlén, 2009) this restricts understanding of how mothers and fathers' sense of entitlement varies and informs decision making. There were some indications of changes in men's decisions on working hours, largely through accounts of partners' behaviors. Future research focusing specifically on the minority of men who reduce working hours in SET either formally or informally would help to understand whether there are shifts and if so how this comes about. Second, further research in other countries could help to understand the relationship between national contexts such as welfare systems, normative gender assumptions about parenthood, and career progression and potential in SET occupations. Finally, more in-depth research highlighting the differences between different SET sectors, occupations, and indeed departments and functions within individual companies would add valuable understanding of how gendered cultures are perpetuated despite the good intentions of many SET employers.

Implications for Practice

Employer recognition of the need to develop and retain talented women has become increasingly important, supported by the so-called business case for diversity. All the participating organizations in this study were concerned to retain talented women and remove barriers to their advancement, but gendered assumptions about ideal workers that conflict with parenting commitments and expectations still prevailed.

The mothers in this study valued both the careers for which they were highly trained and also motherhood. Strong attachment to their professional identities is not surprising given their considerable investment in their human capital to reach their current positions as professional scientists and engineers, and often having had to fight entrenched gender stereotypes to prove that women could do these jobs well. However the parents are actors in social contexts where, to varying degrees, flourishing in family roles is constructed as being at the expense of career roles and vice versa. This has implications for the sustainability of SET companies and of families. Organizations must recognize that well-intentioned work–life policies are not in themselves sufficient to change entrenched values. We have seen the vital role of sensitive and creative approaches by line managers in our three examples of sustainable careers. Companies should ensure that training is given to those decision makers who are in a position to challenge stereotypical views and assumptions about mothers. Furthermore, senior role models working part time and progressing (both men and women) should be made more visible to foster a greater sense of entitlement to sustainability of careers and caring roles.

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