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Learning to not belong: entrepreneurial learning experiences of women high-tech entrepreneurs

Abstract

Purpose – The influence of gender on high-tech entrepreneurship is of growing interest worldwide, as scholars argue that women face gendered barriers specific to this field. Although some gender-focused research exists on the interplay of context and entrepreneurial learning, these issues have yet to be intensively studied and the research addresses this gap.

Design/methodology/approach – The research draws upon empirical evidence from the entrepreneurial learning of nine women opportunity entrepreneurs in the high-technology sector in Norway. It employs a qualitative phenomenological approach, with retrospective and in-depth interviews to capture and analyze the entrepreneurs' lived experiences and learning histories.

Findings – The entrepreneurs in this study highlight gendered learning experiences, leading them to make conscious and strategic decisions of both alignment and resistance to negotiate their enterprise in a highly masculine sector. Their prior learning histories of *not* belonging seem to underpin their preparedness for entrepreneurship in the sector. Counter to prevailing theorizing, *not belonging* is an enabling condition, allowing women entrepreneurs to subvert and challenge a highly masculinized context. This condition empowers them to mobilize their "otherness" to create change within their own ventures and make the rules on their own terms.

Originality/value – This interdisciplinary research deepens the understanding of the interplay between gender, entrepreneurial learning and context through the concept of *belonging* and extends theorization of the gendered dynamics in entrepreneurial learning histories. The paper proposes a framework of gendered entrepreneurial learning in a masculinized industry context, which highlights important implications for future gender and entrepreneurial learning research.

Keywords Entrepreneurial learning, women entrepreneurs, high-tech, belonging, gender

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Introduction

This paper focuses on the learning histories and entrepreneurial preparedness of women who have started, and who lead, their own technology firms in Norway. In doing, so it employs Stead's theory of belonging (2017), to bring a much-needed gender lens to the field of entrepreneurial learning. The paper subsequently proposes a model to illustrate the gendered learning histories and entrepreneurial preparedness of the women in the study as they learn, from an early age, *not* to belong and how to mobilize their 'otherness' in this context.

It is argued that entrepreneurs' learning histories are strongly influenced by the context in which they establish and manage their enterprises (Cope, 2005a; Dy and Agwunobi, 2019; Rae, 2005). Likewise, the role of gender is increasingly emphasized within entrepreneurship more broadly (Jones, 2014), and within high-tech entrepreneurship more specifically (Marlow and McAdam, 2012, 2015, Martin *et al.*, 2015; Poggesi *et al.*, 2020). Despite the evident importance of context and gender, entrepreneurial learning research, and related frameworks, are usually conceptualized as gender-neutral, with scant attention paid to gendered dynamics of the contexts within which entrepreneurial learning takes place (Baker and Walter, 2017; Welter, 2011).

Previous research calls for accounts of entrepreneurship that acknowledge and explore gendered entrepreneurial contexts and women's entrepreneurial experiences (Ahl and Marlow, 2012; Calás, *et al.*, 2009; Henry *et al.*, 2016). Although some gender-focused research exists on the interplay of context and entrepreneurial learning (e.g. Ettl and Welter, 2010), the recent 2017 IJEBR special issue on entrepreneurial learning in knowledge intensive enterprises did not include a gendered lens, or focus on women in their sampling, and this paper addresses this theoretical and empirical gap. Indeed, research on high-tech entrepreneurship and innovation has largely ignored the experiences of women (Alsos *et al.*, 2013; Martin *et al.*, 2015; Wheadon and Duval-Couetil, 2019). For example, Soetanto's

(2017) paper considers an all-male sample to be representative, ignoring the nuances and complexity of entrepreneurial learning for those considered 'unrepresentative' in the sector. Obviously, there are far fewer women involved in knowledge intensive industries and this does inform who is represented in research. Indeed, Rae's (2017) paper in the same special issue, highlights gender as positioning certain groups at the periphery. Rae argues that being on the periphery offers "alternative insights" (p.497) and supports "thinking and creative spaces that engender moments of deep transformative learning" (p.499). However, despite the potential for women, as peripheral actors, to offer alternative insights, Stead (2017) notes that there is limited research on how women entrepreneurs "navigate the interrelationship between the individual and the social in order to belong" (p. 62). This is particularly important in highly masculinized sectors, where women may be positioned as 'others'.

Subsequently, this study takes an interdisciplinary approach (Baker and Welter, 2018), synthesizing gender (after Stead, 2017) and entrepreneurial learning theory (after Cope [2005a] and Rae [2005]) to focus on women high-tech entrepreneurs in Norway who have been at the periphery for much of their educational and working lives. Cope's research (2005a) helps capture individual entrepreneurial learning histories, while Rae (2005) supports the exploration of social context in entrepreneurial learning. Illuminating women's entrepreneurial learning experiences, through adding a gender lens, extends established knowledge of entrepreneurial learning and offers more nuanced accounts of the entrepreneurial learning of women in highly masculinized contexts. It also challenges current approaches to entrepreneurial learning by highlighting the entrepreneurial experiences of those who are currently underrepresented in research, responding to calls in the recent special issue to "explore how different entrepreneurs learn in entrepreneurial enterprises" through "more qualitative, phenomenon-driven research" (Secundo, *et al*., 2017 p. 376).

Stead (2017) theorizes that women entrepreneurs employ various practices to counter negative gender perceptions to achieve belonging. The relevance of Stead's framework and the concept of belonging became clear through the inductive phase of the data analysis, unfolding the women's learning histories. Through lived experiences since the pre-entrepreneurial stage, these women had dealt with tensions of being an outsider and being excluded, and had developed diverse strategies to cope. The research therefore views entrepreneurial learning as a gendered process of social becoming (Rae, 2005), constraining and enabling women across important domains of the entrepreneurial learning task (Cope, 2005a). The study is subsequently driven by the question: How do women high-tech entrepreneurs learn to build a firm within a highly masculinized context?

This paper makes three main contributions: it deepens understanding of the interplay of gender and context, and its influence on entrepreneurial learning, through mobilizing Stead's gender lens of *belonging*; it develops and extends current theorization of the gendered dynamics of entrepreneurial learning in high-tech entrepreneurship; and it articulates the role of gender in entrepreneurial learning histories, specifically. Therefore, in viewing entrepreneurial learning through a gender lens, the research extends and broadens entrepreneurial learning theory, supporting future research with those considered to not belong in a particular context.

The remainder of the paper is structured as follows. First, the paper critically engages with the entrepreneurial learning literature, adding a gender perspective, situating the research, and developing the theoretical underpinning. Following this, the methodology is outlined and the findings are presented and discussed in light of the theoretical framework. The paper concludes by considering the implications for theory, practice, and future research.

Framing entrepreneurial learning from a gendered perspective

Entrepreneurial learning is vital in firm creation processes (Cope, 2005a; Cope and Watts, 2000; Rae, 2000; Rae, 2005) and is considered essential to succeed (Harrison and Leitch, 2005). All nascent entrepreneurs are proactively involved in learning to develop a comprehensive understanding of their actions and strategies during the firm creation process (Cope and Watts, 2000; Cope, 2005a). This process of engagement encompasses "significant 'investment of the self', particularly the extreme levels of emotional and financial commitment and 'personal exposure' associated with small business ownership, which makes the study of entrepreneurs such a unique context within which to explore the phenomenon of learning" (Cope, 2003, p. 430). The entrepreneur is immersed in multiple events, where experiences are transformed, reframed and extended to new situations and opportunities arising in the entrepreneurial context (Cope, 2005a, Rae, 2005). Cope (2005a) highlights three interrelated dimensions inherent in this process, namely the *learning task*, *entrepreneurial preparedness* and *learning history*.

In line with other gender and entrepreneurship researchers (Ahl and Marlow, 2012; Jones and Warhuus, 2017), the study conceptualizes gender as the organizing principle of the entrepreneurial *learning task*, "an axis of power that manifests in knowledge systems and concrete organizational policies, practices, and everyday interactions that appear to be gender-neutral" (Ely and Meyerson, 2000, p. 599). Such an approach mitigates the homogenization of men and women, acknowledging that gender plays out in complex ways for individuals, and within firms. This conceptualization of gender also supports more complex accounts of gendered influences in different learning contexts. Like Marlow and McAdam (2012, 2015), this study focuses on women as subjects, within the highly masculinized domain of the technology sector (Johnson, 2006), viewing the entrepreneurial learning task as gendered,

constraining and enabling women in managing their firms' relationships, internally and externally.

Entrepreneurial preparedness relates to the implicit and explicit prior experiences and learning that are preparatory for a career in entrepreneurship (Cope, 2005a). Norway is not unique in having far fewer women tech entrepreneurs than men. Indeed, in most developed countries, fewer women than men study science, technology, engineering and mathematics (STEM) (OECD, 2016), and consequently, fewer women are prepared for technology entrepreneurship. Various theories may explain why women are not encouraged or inspired to study STEM subjects, such as lack of appropriate role models (Cheryan *et al*., 2011), the potential for stereotype threat (Shapiro and Williams, 2012), gendered differences in work and career values (Guo *et al*., 2018) and the societal perception that STEM subjects are "male" subjects (Hill *et al*., 2010).

A long history of male dominance in the technology sector has created a work environment whose values, practices and culture exclude and under-value women (Marlow and McAdam, 2012; 2015). Indeed, when women *do* pursue STEM careers, they leave the sector at higher rates than men (Goulden *et al*., 2011). Thus, learning history is important for entrepreneurial preparedness, in that the entrepreneur brings her learning experiences, which in turn influences the way she responds to and interprets new experiences (Minniti and Bygrave, 2001; Politis, 2005).

Entrepreneurial learning scholars emphasize that individuals experience situational insights at the periphery (Rae, 2017), and that deep and transformative learning occurs through critical events along their entrepreneurial learning trajectory (Cope, 2003; Cope and Watts, 2000). Such events can arise from threats of bankruptcy, and role conflicts in the growth phase (Cope, 2003) or mistakes and failures (Cope, 2011; Lattacher and Wdowiak, 2020; Petkova, 2009; Politis and Gabrielsson, 2009; Walsh and Cunningham, 2017) and might subsequently

hinder goal achievement (van Gelderen *et al*., 2011). In addition, women may experience specifically gendered financial barriers with, for example, suggestions that women obtain significantly less financial capital to develop their new firm compared to men (Alsos *et al*., 2006).

Subsequently, Fang He *et al*., (2018) call for a better understanding of learning behaviours employed by entrepreneurs to cope with such emotionally charged learning experiences. In this respect, little is known about the coping responses among women entrepreneurs and their role in learning trajectories (Stead, 2017). Hence, there is a need for a more nuanced understanding of how women entrepreneurs deal with gender-related challenges that might influence their entrepreneurial learning process and outcomes. To do so, this research employs the concept of *belonging* introduced by Stead (2017).

Stead (2017) proposed the concept of *belonging* to explain the relationship between women entrepreneurs and socially embedded gendered assumptions in entrepreneurial practice. The concept of belonging expresses sentiments of what it is to fit in or to feel out of place, to be an insider or to be excluded, to feel accepted or to feel marginalized. Stead uses this concept to enhance understanding of how women cope with gendered assumptions, to be recognized by others as entrepreneurs and to become part of, and feel involved in, an entrepreneurial business or a wider community.

More specifically, this research considers how gender operates through entrepreneurial learning processes of belonging, how women counteract gendered assessments and the practices that they use to navigate this context. Stead (2017) emphasizes women's experiences in achieving belonging as a dynamic, ongoing and intertwined "doing of entrepreneurship and doing of gender" (p. 73), and is, as such, an ongoing process. Feminist approaches have emphasized the "doing of gender" as performative action that is created, negotiated and reproduced through social relations in various contexts. Doing gender

therefore incorporates women's experience of entrepreneurial learning practices, producing and reproducing gendered normative practices (West and Zimmerman, 1987; Baker and Welter, 2017). Likewise, the concept of belonging is multidimensional, interweaving with social conditions including gender, and social mechanisms of exclusion and inclusion. Performing belonging and performing gender therefore includes essential strategies and practices to grow a firm, such as overcoming the liability of newness, and coping with the liability of being a women entrepreneur in a male dominated tech context. This study argues that Stead's conceptualization of belonging therefore offers a means to obtain knowledge of the socially produced and gendered nature of the entrepreneurial learning process.

How women perform belonging can take different forms (see table I), which Stead (2017) conceptualises as *by proxy* (getting access through a male partner), *concealment* (concealing femininity and/or concealing the entrepreneurial identity), *modelling the norm* ("fix the woman approach" where women do not transgress gender-ascribed boundaries), *tempered disruption* (women disrupt traditional and normative expectations of what an entrepreneur is and soften this approach in order to belong), and *identity switching* (switching between different identities in different contexts in order to gain legitimacy).

In this research, women's sense of belonging during their learning history is explored, including the pre-entrepreneurial stage, upbringing and schooling, higher education, and prior job career (thereby explaining entrepreneurial preparedness). When the women engage in entrepreneurial learning, strategies of belonging in different social interactions are emphasized, with multiple relevant actors outside the business as well as inside the entrepreneurial firm.

Insert Table I about here

Methodology

Research context

Although the number of women entrepreneurs continues to grow, only 30 per cent of new enterprises in Norway were started by women (Grünfeld *et al*., 2019), with women owning only 4 per cent of venture capital-backed and high-growth firms across all sectors. Furthermore, only 14 per cent of entrepreneurs within STEM industries are women (Grünfeld *et al*., 2019) and only 1 per cent of women entrepreneurs are within high-tech sectors (Investinor, 2015). Eriksen (2018) shows that Innovation Norway (the Norwegian government's official instrument for funding of Norwegian enterprises) still allocates most funding to male entrepreneurs, and that financial support for women-led projects has in fact declined in recent years. Overall, these figures reveal that women constitute a marginal minority within high-tech opportunity entrepreneurship in Norway.

Research methodology

The research adopts a qualitative research design, exploring the lived experiences and learning histories of nine women opportunity entrepreneurs in the high-tech sector in Norway. More specifically, it employs Cope's (2003) research approach to entrepreneurial learning by using retrospection to encourage respondents' reflection on preparedness for entrepreneurship. The research focused on their education and earlier industry experiences and how their learning histories fed into the venturing process. The study used a phenomenological approach (Rajasinghe *et al*.; 2021), with retrospective and in-depth interviews to understand the respondents' practice (Cope, 2005b; Rae, 2000; Van Manen, 2016), and employed an abductive approach, combining deduction and induction (Tavory and Timmermans, 2014).

Central themes in the interviews explored entrepreneurial preparedness, critical learning events, and entrepreneurial learning tasks. The masculinized context was not emphasized in the questions and only one question, toward the end of the interview, asked about their thoughts on being included in a list of women tech-entrepreneurs. Many of the comments on gender emerged spontaneously as they narrated their journey from home, to education, to business start-up and growth in a male-dominated industry. Their gendered experiences, both positive and negative, therefore emerged as they reflected on their position within the high-tech sector. Interviews lasted between 50–90 minutes and were digitally recorded and fully transcribed. Triangulation was achieved by reading media articles about the interviewees, studying websites and participating in seminars and networking events that focused on women entrepreneurs and women in the high-tech sector.

Recruitment and entrepreneur profiles

The study defines high-tech firms after Glasson *et al.* (2006), who argue that such firms are characterized by: a strong emphasis on (1) innovation and (2) intensity of resource inputs, R and D and attracting highly skilled personnel.

Given the small number of women entrepreneurs within high-tech in Norway it was easy to obtain an overview of potential respondents, who were recruited through industry networks and organizations promoting women entrepreneurs. The study employed strategic sampling to identify respondents who matched the following selection criteria: 1) high-tech firm with a radically new technology operating in B2C and B2B markets, 2) firm with progressive development in recent years, attracting investment and highly skilled personnel, 3) firm led and/or owned by a woman entrepreneur, born and raised in Norway, and 4) the entrepreneur has technology ownership and a stake in the start-up process/ commercialization of the technology. The criteria were ensured through media references, descriptions on forums/websites, officially available register data and media coverage.

The recruitment process aimed to ensure a rich and comprehensive dataset across age and experience, and obtained a sample of nine women entrepreneurs who were willing to participate, from an initial list of 20.

Since the population of women high-tech entrepreneurs satisfying the selection criteria is small, the study aimed to secure full anonymity and confidentiality, and respondents were given pseudonyms. Participants' firms represent diverse sectors within both high-tech manufacturing and high-tech services, such as ICT, nanotech, biotech, chemistry and advanced materials. Table II presents the nine women high-tech entrepreneurs, who were founders/co-founders and CEO, of companies established between 2010 and 2017.

Insert Table II about here

Data analysis

First, the three researchers independently read and coded the transcripts, combining thematic analysis methods (Braun and Clarke, 2006) with the approach of Gioia *et al.*, (2013). An initial list of broad codes, drawn from the entrepreneurial learning and gender literature, was developed as a back-drop for further coding, which included work practices, participation, relationships, culture, role, learning challenges, gender binaries and masculine norms. The first round of initial coding occurred while reading the transcripts. Data were coded in accordance with the broad categories in the initial list, discussed and compared across the research team to ensure reliability and content validity. Then, individual, independent, open and inductive coding was performed to develop the first-order codes. The researchers looked for similarities and differences among the emerging categories and searched for deeper meaning and relational structure within our data as the themes emerged (Gioia *et al*., 2013). In the next two rounds,

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the abstract coding process developed into theoretical subcategories (second order categories), comparing differences across informants amongst the extracted themes.

As the second order categories emerged, new and fine-grained understandings of the complexity in the learning experiences of the entrepreneurs were gained. The overarching theme of *not* belonging emerged from the initial inductive analysis and was identified by all three researchers – who analyzed the data separately. As a young girl, student or employee, the women went through emotionally loaded experiences pushing them to develop strategies to deal with tensions of being an outsider and being excluded, and eventually to develop strategies to gain acceptance whilst learning to cope with and mobilize *not* belonging. This was a strong commonality across the women's learning histories, contributing to their entrepreneurial preparedness to progress in the masculine tech-sector. The nature of *not* belonging, was a surprise and puzzled the researchers. In light of this, the researchers decided to revisit the literature to see what research had been done specifically on such tensions and women entrepreneurs. During this phase Stead's (2017) framework was identified, which offered an appropriate conceptual framing for the inductive codes through the concept of belonging. Stead's ideas supported further analysis of how previous experiences of belonging and *not* belonging seemed to drive the participants' entrepreneurial learning histories. From there, the second order categories were conceptualized into theoretical aggregate dimensions, moving from an inductive to an abductive analytical step where "data and existing theory are considered in tandem" (Gioia *et al.*, 2013, p. 21). This resulted in the development of four aggregated theoretical dimensions (see Figure 1 for the data structure). In the final stage of the analysis the researchers returned to the entire dataset to confirm that the final structure reflected the richness and depth of dataset.

Findings

Four key dimensions emerged from the analysis of the entrepreneurs' learning histories (see Figure 1). The appendices (tables I-IV) offer more detailed information on the second-order categories, their first-order codes and representative quotes, which provides transparency and additional empirical evidence to substantiate the aggregate dimensions. The aggregated dimensions represent the underlying patterns of the interplay between gender, belonging and entrepreneurial learning in the high-tech context: (1) a learning history of *not* belonging; (2) the risk of disturbing the "natural" order; (3) to play or not to play; and (4) challenging the masculine norm from within. The following section outlines how the theoretical framework comes into play through these overall dimensions, and their underlying sub-dimensions, and illustrates the learning histories through selected quotes. Figure 1 presents the data analysis structure, comprising first-order codes, second-order categories and the aggregate theoretical dimensions consistent with Corley and Gioia (2004).

Insert Figure 1 about here

A learning history of not belonging

The entrepreneurs in this study sample have both technology and non-technology educational backgrounds (henceforth, tech and non-tech). Consequently, their entrepreneurial preparedness differs somewhat across important dimensions of their learning histories. The research identified two underlying thematic dimensions for the two groups: *being in the "other" category* for the non-tech women and *being the "only" girl (among boys)* for the tech women. Both categories reflected women's experiences of *not* belonging, due to their special

interest in technology and technology entrepreneurship during their upbringing, formal education and/or work experience.

In the non-tech group were highly experienced entrepreneurs, with histories of either early interest, experience and/or education in commercial-related activities such as entrepreneurship, project management and business development. The common route to technology entrepreneurship was their interest in developing and creating value, instead of pursuing a traditional career in a large company. Hence, these women went against the grain, and chose a different path than their peers:

> [My] fellow students were very dedicated to their studies and had big dreams of becoming consultants and starting in the big four companies, and I didn't really find that very interesting. I started to think: "isn't it more fun to create something on your own?" It was during my years in [Scandinavian city] that software and tech-companies became important. (Marit)

Three of these non-tech women (Eva, Bjørg and Marit), with an interest in technology entrepreneurship, took a master's programme in entrepreneurship. However, being accepted onto the programmes with a non-tech background was difficult for Eva (Economics) and Bjørg (arts background). Marit was only accepted when the master's programme changed its application criteria. Hence, the non-tech women had trouble being accepted onto master's programmes aimed at technology and/or business students and were put on the waiting list and in the "other" category. These programmes introduced Bjørg and Marit to technology and commercialization activities as non-tech students, collaborating with tech peers. They also participated in international internships in start-ups in the USA, and this experience inspired and generated valuable entrepreneurial experience and self-confidence as future entrepreneurs.

Bjørg and Berit started their first companies at a very young age, even before formal higher education, and had a seemingly natural talent and interest in entrepreneurship. Anne, Berit

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and Eva had worked in the tech industry, gaining experience with innovative technology after their master's degrees, and had proved themselves as competent non-tech project managers and leaders of groups of engineers:

> You get into a system where you're taught alongside the engineers, so you're taught how the technology works and as a salesperson in [large company], you were also a project leader for the engineers. You foster teamwork, and you manage to create something, to answer RFQs, or draft project reports. You manage to win bids, etc., it's quite a good entrepreneur school. (Berit)

Ultimately, the non-tech entrepreneurs did not feel that they really belonged in several contexts: in formal education, they chose to go against the grain compared with their peers, choosing the less obvious career path of entrepreneurship. They completed master's programmes that were intended for other educational backgrounds. Furthermore, in their early entry into tech companies, they built competence as "fixers" and managers of the non-technical aspects of technology projects. In sum, the non-tech women had diverse experiences of being in the "other" category, of not fitting in. Nevertheless, they pursued their initial interest in entrepreneurship in Norway and/or internationally, gaining rich and valuable experience and shaping their preparedness for an entrepreneurial career in high-tech.

The women *with* technology education backgrounds exhibit another pattern of "otherness" in their learning histories, with the common experience of *being the only girl/woman* both in formal education and in working life. These women displayed an interest in technology from an early age, with their fathers playing a role in stimulating their interest and supporting them in choosing a non-traditional STEM education. They were somewhat "nerdier", deviating from other girls in their class, having other characteristics and interests:

> I had problems with Norwegian at school, and handicraft, but not math. I'm very creative, but in a technological manner, if that makes any sense. (Nora)

In line with Marlow and McAdam (2012), they were used to being the only girl and perceived as an outsider during their schooling. Astrid, Kari and Nora reveal an early history of developing coping strategies to fit in to overcome this "otherness":

> I went through an important process while doing my major because there were only boys there. To survive, I had to be more like them. It was primarily related to humour, and they always tested me, bullied me a bit. But it was in a friendly way, so I either had to toughen up or do as they did. (Nora)

Astrid adapted early on to these circumstances and used her otherness to her own benefit, as a strategic advantage to get support from the male "nerds" in her high school class, reflecting gender play (Marlow and McAdam, 2015) from an early age in her learning history of preparedness:

> I was good at buttering up the nerds. There was one guy called Tom, he was ginger and had lots of pimples. I bought him a Coca Cola and Snickers and in return, he gave me all the codes he had programmed. (Astrid)

The feeling of exclusion seems to continue during their industry careers, including for the younger entrepreneurs with a shorter learning history, as Inger explains:

> There are a lot of boys. Women normally work in other industries. Our mentor is a guy. All my industry people are usually men, and their operation managers are men, and their managers are men.

In sum, for these women, pursuing entrepreneurship was simply the continuation of a lonesome challenge in a long history of not belonging, in schooling, in higher education and in working life. In consequence, their unique learning histories enhanced their entrepreneurial preparedness, as they were prepared to endure and cope in a male-dominated environment.

The risk of disturbing the "natural order"

When entering the male-dominated high-tech environment, respondents often found themselves perceived as different, in terms of being an unusual presence and out of the ordinary (Marlow and McAdam, 2015), these women "disturbed" the natural order in this context, which left them in a highly visible and exposed position, and many linked this notion to themselves as being risk-takers. However, the main risk here was not the traditional conceptualization of risk, related to setting up a new firm (Cope, 2011). Instead, this was the contextualized risk of being a women entrepreneur in a male-dominated industry. The analysis revealed two related underlying themes: *In the wrong place* and *Liability in resourcing (financial and network resources).*

With respect to the first theme, In the wrong place, it is evident that the culture in the high-tech sector presents barriers for women's progression. One reason for this is that men, who constitute the majority, historically have controlled the social mechanisms of exclusion and inclusion (Gilbert, 2001; Johnson, 2006). If the women strive to fit in and belong, they have to comply with the cultural norms and follow the rules of the "male" game. The younger entrepreneurs noticed that, having reached a certain level, the masculine culture created barriers, preventing women's progression within the industry more broadly:

> [Even] though there's a lot of good things, … it's still a boy's club, … there's a culture there in which you have to be a part when arriving at a certain level, because if you're not, you won't be able to do your job. I don't know if it's worth being part of it for that kind of job. (Eva)

It was also obvious that the women perceived the masculinized culture as quite different: not easy to grasp, and nor did they feel they belonged. They rather perceived this world as strange and unattractive.

They had also experienced critical events of not being recognized as competent business owners and entrepreneurs. The experience of not being taken seriously by male counterparts

can have dramatic personal consequences, as Bjørg's learning account reflects. Here she recounts her decision to leave a firm that she had founded:

> I had to cooperate with an elderly male engineer who kept … laughing at me. I just reached a point where I thought I had better things to do than having to cope with him. I decided to leave the firm because of him. I don't know if it had to do with gender or age, I guess it was a mix of both. When I talked about technical problems and said we needed a certain expertise in our team, he just laughed at me and patted me on the head and said that I didn't know what I was talking about. (Bjørg)

Hence, the male-dominated culture tended to question and downgrade women's competence as entrepreneurs, also reflected in Anne's experience in a board meeting:

> The first time we got money, a guy on my board thought we had to hire a man in order to spend the money wisely. I was very insulted and said: "You know what? that's extremely demotivating. If you want to continue without the money and don't want to succeed, just go ahead". After three weeks, he came back and said: "Ahh, maybe I was wrong". (Anne)

The entrepreneurs also had personal experiences of sexism and harassment. This is consistent with other international research on women entrepreneurs in tech fields (Dy *et al*., 2017). Even the younger entrepreneurs had experienced "a hug that lasts too long". To handle such situations while performing entrepreneurial tasks can be challenging, and they recounted unwanted sexist behaviours in numerous situations. Here, Anne reflects on the risk of being a women entrepreneur in a highly masculinized culture, and the difficulty of coping with sexism.

> Many men might think that women are sexually interested in them, but when it comes to alliances, they must be only business-oriented and nothing else. A successful, creative woman can easily be attractive to more experienced partners. So, I think it's challenging. (Anne)

Hence, ordinary entrepreneurial tasks, such as alliance building might trigger "gender trouble" (Roseneil, 2000, p. 26), hindering women in employing entrepreneurial tactics to advance their firm (Bruni *et al*., 2005; Marlow and McAdam, 2012). Some women saw the barriers as too difficult to surmount, and eventually chose to shun/stay away from male-dominated arenas, as Berit's reflection highlights:

> Women of my generation don't even call it sexual harassment, for us, it's just "that hand on the thigh", or "someone knocking on your hotel door". You always have these things all the time that limit who you can be and which forums you should be in.

Thus, respondents acknowledged diverse barriers in the high-tech sector in the form of exclusion and not belonging, and episodes of downgrading of competence and sexual harassment. These experiences generated tension and conflict while pursuing their entrepreneurial projects. However, they did not seem to pursue, or value, belonging or compliance with the dominating norms and rules of the game. On the contrary, many expressed a lack of interest in achieving and striving for belonging under such terms, They accepted they would never fit in; indeed, they did not see the masculine culture as somewhere they *wanted* to belong.

The second theme *Liability in resourcing* (financial and network resources), primarily concerns the disadvantageous influence of gender upon women's experiences in setting up a new firm, such as securing funding, attracting key resources and establishing networks.

Berit, one of the entrepreneurs with a longer industry career history, had learnt to avoid masculine arenas and "boys' clubs" (after official meetings), thus removing herself from potentially uncomfortable situations, and acknowledging the risk of missing out on important networking:

So, you must find someone else to do that part of the job.… My experience is that what I do - which is to go to bed after dinner is finished - isn't very popular, because that's when the party begins. That's when the guys start bonding. (Berit)

She had learnt to appoint a male colleague, literally a "stunt man", for such occasions, which represents a form of strategic "concealment by proxy", meaning that she is not masking or concealing herself as an entrepreneur, nor using by proxy alone (Stead, 2017), but instead combining these two forms of belonging in leaving this role to a man.

The women entrepreneurs also reflected on investors and funding issues:

When we were searching for investors, I started to think about the fact that I'm a woman in a male-dominated business. We had to meet 250–300 investors before we got a "yes", and that's when I started thinking that it might have been easier if I was a man and not a woman … maybe we would have had to meet only 100 investors to get a "yes" if I was a man. (Bjørg)

The learning effect of various critical events related to this *Liability of resourcing* resulted in finding alternative strategies and tactics, such as avoiding/staying away from general networking arenas. Instead, they preferred personal, trusted, long-term relations mostly acquired from previous careers:

You have to face challenges all the time, especially when it comes to old men that have worked in the business for too long. You're young, you're a woman. You meet these people all the time. But you have to ignore it and try to focus on the positive parts; the people who believe in you and trust in you. (Kari)

Many of these personal relations consisted mainly of men, and consequently they used their male contacts to obtain their goals. This again reflects the notion of "by proxy" (Stead, 2017),

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which entails accessing entrepreneurial opportunities and networks through a male partner in the industry.

Entrepreneurial learning is inherently imbued with uncertainty and ambiguity, often leading to emotional exposure through critical incidents (Cope, 2003). Contextualizing critical events from a gendered perspective adds intriguing nuances to this line of theorizing, as reflected here. The influence of, and the learning from, such critical events informs the next theme – how the women entrepreneurs learn to deal with these situations.

To play or not to play

Stead (2017) conceptualizes how women entrepreneurs perform belonging to gain entry, progress and acceptance in the industry and as entrepreneurs. Here, it can be argued that the gendered coping strategies of our entrepreneurs' hinge on *playing the game* and/or *playing differently*. With these insights as a back-drop for further analysis, these two forms of gendered coping strategies were further explored.

The first theme relates to how the women *play the game* in their management of customer and industry relationships, to cope with the risk and liabilities associated with being women entrepreneurs in a male-dominated industry. Here there are examples of coping by trying to fit in and how "dressing to fit the space" (Marlow and McAdam, 2015) in front of customers is replicated very deliberately in an almost chameleon manner. In line with Stead (2017), such behaviour is an example of *identity switching*, through using different and variable gendered identities to attract and retain clients. At the same time, this switching is balanced with a level of *concealment* of traditional femininity (Stead, 2017), because of the reaction it may provoke, as when Astrid wears worker clothes instead of a short skirt:

> I must look like somebody who works there, so I have to put on specific working shoes. If I come in heels, they won't even talk to me. You must look like them. When I go to meet businesspeople, I have to look good, though. Then I have a couple of pairs of Alexander Wang

under the seat of my car, and I put on a white blouse and fur. So, I must change my outfit depending on who I'm meeting. If I were to go to the customer in a short skirt and high heels they would've thought: "Is she sleeping with someone to get customers?" Wearing worker clothes, it doesn't become an issue. (Astrid)

The analysis reveals that playing along with stereotypical assumptions of feminine behaviour can be used very deliberately to obtain access and resources. These women have become highly aware of the tension between professional credibility as entrepreneurs and ascribed femininity. Instead of concealing the feminine identity, it can instead be used as a strategic marker to *model the norm* in a consciously "manipulative" manner, through consciously playing along with gender stereotypes:

> When I develop the software, it's easier for me to act in a humble way being a woman, it's more allowed. You can say: "I'm actually not sure of what you mean", without having anyone judge you. A man couldn't have said the same thing. I think it's an advantage because I can always say: "I'm not really sure what you mean, could you please explain it again?" I'm also blond so they probably think I'm stupid. It gives you more creds to be humble and honest and ask for explanations. (Astrid)

This learning account reveals that there are obvious benefits of playing along with the classical stereotypes and mobilizing their outsider status.

The second theme: *Playing differently* reveals a new aspect. Instead of complying with gendered expectations, by showing the appropriate level of toughness and tempered femininity to fit in and play the game (Marlow and McAdam, 2012; Stead, 2017), one can choose *not* to play along with stereotypes, by being and doing something completely different. "Different" is more difficult to categorize, and represents a coping strategy to deliberately by-pass gendered expectations, rendering oneself untouchable, and protecting one's integrity and identity as an entrepreneur:

I don't try to pretend to be something I'm not; my customers never get to see me in a suit. Being a girl who works with technology, they tend to automatically categorize you. Maybe also because I'm quite weird. I don't like to fit into boxes, and I think that's good when you work in the world of technology. (Bjørg)

Bjørg displays a strong entrepreneurial identity, reflected in her thoughts about the gender binary – rejecting it – and how this relates to herself:

"Can gender be divided into two categories?" I don't think so, I think it's a lot more complex than that. I don't often relate to the conception of women, but I'm not a man. It's complex. It makes me think: "Can't I just be allowed to be an entrepreneur?"

Bjørg's reflections suggest that the tech field grants her the authority to be different because of its status as a playground for nerds and misfits. Furthermore, this represents a special variant, which can be interpreted as a strategy that renders female identity irrelevant, through a "performance" that is not easy to categorize. The tech-context grants them this authority, despite diverging with normative and gendered expectations. There is also other evidence of rejecting the typical role identity of the male entrepreneur, in that these women possess other qualities that may be of high value in the entrepreneurial role identity.

The entrepreneurs ultimately use a wide array of Stead's (2017) forms of belonging. Nevertheless, our findings suggest that these women ultimately do not strive to belong in the male-dominated high-tech sector. Rather, these may be interpreted as strategies of *not* belonging that also motivate them to challenge practices in the sector.

Challenging the masculine norms from within

All respondents were highly aware of the masculine norms dominating the work culture within their sectors and they wanted to challenge these within the boundaries of their firm, with themselves at the centre, as entrepreneurial agents. They do so by *creating a balanced*

work–life culture and diverse team and *claiming entrepreneurial legitimacy on their own terms*.

With respect to the first theme, *Creating a balanced work–life culture and diverse team*, the entrepreneurs were concerned about the prevailing work practices and unhealthy work culture:

> Doing 60-hour workweeks creates a macho tech culture. I had an employee who died when he was 42. I prohibited him from staying at work after 7 pm. He thought of his working all the time as status, and he liked to brag about it. But I told him he wasn't allowed to work all the time, that he had to come at 10 am and leave at 7 pm. (Anne)

The younger entrepreneurs were especially concerned about their employees having the flexibility to combine a family life with a hectic start-up career. The more experienced women, who were socially marginalized in their previous male-dominated workplaces, wanted to create a team with diverse competencies and backgrounds, challenging the norms within and through their firms:

> I think it's important to involve more people with different backgrounds. We're more women than men. We have different cultures. We have a Russian, a German, two from Norway and so on. I think it's important to mix people from different backgrounds. (Anne)

> I think it helps a lot to have a team with both men and women, it creates a better balance. (Inger)

These learning accounts show that founding their own business allowed the women to challenge established industry norms by creating culture and work practices that differed from the norm.

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The second underlying theme reveals that respondents also resisted the prevailing

masculine norms about entrepreneurship and were *claiming entrepreneurial legitimacy on

their own terms*. The prevailing assumptions – that tech entrepreneurs are by definition male

(Marlow and McAdam, 2012), with the commonly accepted figurehead of an individualistic,

heroic, opportunity-seeking individual (Ahl, 2004) – provoked resistance and the motivation

to redefine their own entrepreneurial role, being true to themselves and their values:

> I'm not a typical entrepreneur, I'm more a person who likes to carry out whatever I start, and I
> think that's an important personality trait to have in order to be successful. (Anne)

> I think people imagine the stereotypical leader as someone with manly traits; one who takes up
> a lot of space and shows who's the boss. But I feel that women have a lot of nice qualities that
> combine well with being a boss. Women tend to be better at noticing how their colleagues are
> doing and based on that they can choose appropriate tasks. I think it's a latent quality within
> girls that we should promote more. (Inger)

As these learning accounts reveal, these women did not identify with the individualistic,

heroic entrepreneur; rather, they concentrated on building an effective, high-functioning team.

This approach was highly motivating and inspiring for them. In practice, they actively

claimed they were *not* living up to masculinized industry expectations but tried to establish a

new agenda for the entrepreneurial role that they identified with. The common denominator

was to practise a "softer" and interactive management style. This finding echoes Dy *et al.*'s

(2017) study, suggesting women tend to embrace softer qualities in the entrepreneurial role:

> Many of my employees have worked for years for a low salary, so I can't really do any powerplays
> at work, that wouldn't be very popular. I have a relatively soft manager style that allows the

employees a lot of freedom and responsibility…. (Anne)

The women had also observed a masculine industry culture that encouraged taking short cuts in decision-making, boasting about growth ambitions and acting tactically and opportunistically at the expense of moral integrity and openness, which clashed with their values:

> I don't believe in pretending to be tough, I believe in being transparent, open and honest. And that's something I take with me in everything I do. We have a Google drive with everything, documents etc., it's open for everyone. The employees don't necessarily read through everything, but they have access if they want to. They know that we don't keep any secrets. I think simple tricks like that from the beginning are important. (Bjørg)

The women had experienced masculinized industry norms during their learning histories and had over time developed strategies to deal with them. Several stated that creating their own firm was an escape route, enabling them to take the lead (Kempster and Cope, 2010), particularly in challenging the masculine tech sector on their own terms:

> You end up choosing a job that makes it possible for you not to have to participate in certain arenas to be able to be successful; you must be the director instead. (Berit)

Across these two sub-themes we see how changing the rules of the game in the industry, and the positioning of themselves as entrepreneurs by employing a more authentic, value-driven leadership style, plays out. They reject behaviours allied with the stereotypical male entrepreneur and, as such, they perform a variant of the tempered approach, that of *not* belonging. This interpretation nuances Stead's (2017) theorization on tempered disruption. These entrepreneurs do not adapt their approach in order to belong in a hostile context, instead they actively and deliberately seek to re-shape the context itself, in order to create

their own space to belong. Being an entrepreneur is not something that is granted to them, it is something they claim, on their own terms, as a result of their learning history.

Discussion

Learning to not belong

The female entrepreneurs in this study outline gendered learning experiences, leading them to make conscious and strategic decisions of both alignment and resistance to negotiate their enterprise in a highly masculine sector. They seem able to mobilize their "otherness" to create change and make the rules on their own terms in creating and developing their own firms. Therefore, a new framework of gendered entrepreneurial learning in a masculinized industry context (Figure 2) is proposed, which illustrates the relationships between the overall dimensions from our analysis and forms the basis of our discussion.

Insert Figure 2 about here

The participants' prior learning histories of *not* belonging seem to underpin their preparedness for entrepreneurship in the masculinized high-tech sector. From a young age, their experiences of education in both school and university have developed their understanding of how they are positioned, and they consequently developed coping strategies before they even established their firms. Some of these experiences of not belonging also formed part of their previous employment history within larger tech companies. Prior experience of not belonging appears to have developed their sense of confidence in, and understanding of, how, when and why they can subvert, play with and challenge gendered norms as entrepreneurs. In the present, they primarily use their firms as a vehicle for doing so,

in their recruitment, management and networking practices, and in their relationships with clients, investors and staff.

Not belonging underpins their preparedness but it is also a resource to draw on throughout their entrepreneurial learning, feeding into their coping strategies as an outcome of the critical events that they experience in establishing and growing their businesses. In turn, these critical experiences prompt reflection on how to cope with *not* belonging that does not compromise their values and integrity, both at the firm and at the individual level. They position themselves as risk-takers in this respect and are clear in describing themselves as such. Even when there are hints at compromise, such as adjusting how they conceal or reveal their femininity, or how they play along – or not – with gender norms, they do not undermine their true selves and are confident in doing things differently. In handling entrepreneurial tasks, they actively use a wide array of coping strategies as proposed by Stead (2017), but their goal reflects an underlying strategy of *not* belonging rather than belonging. This suggests they are cognizant of the fact that they will neither fit in nor feel belonging, unless they comply with the dominant masculine norms, thereby compromising their true selves. Instead of being cowed or subordinated by this otherness, they seem to grasp the opportunity to challenge the prevailing norms from within. Hence, they create a strategic space in the industry for doing things differently, and consequently create a space (their own firm) to belong. Ultimately, successful entrepreneurship, for these women, is about *not* belonging and the opportunities this brings to subvert gender norms within the high-tech sector. In accordance with Stead (2017), belonging and, more importantly *not* belonging is an iterative and ongoing process based on entrepreneurial learning.

With respect to the findings and generalizability, women entrepreneurs in other countries may not experience the same liberty to challenge masculine norms from within. The entrepreneurs in this study operate in Norway, a society with a "feminine" culture (Hofstede,

2003), emphasizing gender equality, and this may have an effect on these strategies, thus the findings have to be interpreted with this cultural dimension in mind. However, as women represent a marginal minority in most Western high-tech contexts, it is likely that our findings will resonate more broadly.

Conclusions

Implications for theory

With this study, entrepreneurial learning research is extended by furthering understanding of women entrepreneurs' learning processes in masculinized high-tech industries, through a gender perspective. Applying a gender lens expands current understandings and conceptualizations of entrepreneurial learning (Cope, 2005a; Rae, 2005). The entrepreneurs in this study experienced numerous critical events that represent a reinforced "double liability" – the entrepreneurial liability of newness/smallness and the liability of being a woman in a masculine context. This work subsequently challenges entrepreneurial learning research in which critical events are treated, both theoretically and empirically, as self-imposed and gender-neutral (Cope, 2003; Rae, 2005, 2017; Petkova, 2009; Secundo *et al.*, 2017). This study suggests that women experience structural disadvantages from the outset, hindering them in resourcing their enterprises and establishing strategic alliances. However, it seems that the respondents in this research have learnt to cope with and mitigate these disadvantages through learning to *not* belong and in doing so, challenge and subvert the masculinized culture. This research therefore contributes to developing a more nuanced, gender-aware understanding and conceptualization of the entrepreneurial learning task (Cope, 2003, 2005a; Rae 2005) at the periphery of a particular context (Rae, 2017).

Not belonging brings empowerment to the entrepreneurial learning process, contributing to the theory of belonging (Stead, 2017). The research suggests a new category of coping, enabling women entrepreneurs to avoid reproducing gendered normative practices in their

negotiation of relationships (West and Zimmerman, 1987; Baker and Welter, 2017). The study proposes the notion of *by-passing* as a different variant of coping with peripheral status, which seeks to make gender irrelevant. Furthermore, investigating women entrepreneurs in high-tech contributes to the limited number of extant empirical studies.

Implications for practice

This research highlights several implications for practice. The persistence of masculinized norms in the broader tech industry obviously presents barriers for women striving for a high-tech career, through social mechanisms of exclusion. Respondents addressed this by creating their own firm and challenging the norms from within. To attract a new generation of women into the high-tech sector, it is critical to establish policy programmes aiding women to thrive in this industry and likewise introduce programmes that develop awareness among men working in this industry, addressing the need to change the dominating norms and cultures, thereby making this sector attractive for all.

Limitations and future research

The sample size is in this study was restricted due to the limited number of women high-tech entrepreneurs that could be included in this Norwegian study context. However, the number of women high-tech entrepreneurs will grow, and so this study can be replicated and extended in the future. It is also essential to adopt a longitudinal research design to capture long-term learning histories and their outcomes to validate the robustness of the theoretical arguments and the proposed model.

The research explored the entrepreneurial learning experiences of women entrepreneurs in high-tech and future research could build on this to include other industries and other countries, to further explore the gendered dynamics of entrepreneurial learning across different learning contexts. This would further develop understanding of the potentially gendered dynamics of entrepreneurial learning.

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