

CRANFIELD UNIVERSITY

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Out of reach out of touch?
The impact of flexible work arrangement use on collaboration within
teams

Cranfield School of Management
PhD

Submitted for the degree of Doctor of Philosophy
Academic Year: 2013 - 2017

Supervisor: Professor Clare Kelliher
August 2017

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ABSTRACT

Organisations are faced with a growing interest in flexible work arrangements that enable employees to control where, when and for how long they work and need to find ways to adapt and integrate these practices into work routines and processes. Because these arrangements reduce employees' facetime at the office, doubts remain regarding their impact on collaboration within teams. In this thesis I explore the impact of the use of part-time work, telework and flexible working hours on collaboration within teams and the contextual features that explain this relationship. Seven case studies were conducted in software development teams in three organisations in The Netherlands and Belgium. Findings suggest that telework, part-time work and flexible working hours impact on collaboration within teams because of reduced passive facetime – passive presence of team members at the office without necessarily engaging in interactions with each other. Passive facetime was interpreted as availability to others and an enabler to collaboration. A theoretical framework is put forth outlining six sets of contextual features that impact on this relationship. At the team-level, these included skill differentiation, task characteristics (task complexity and goal clarity), temporal characteristics (temporal stability and task urgency) and structural characteristics (regular face-to-face meetings, amount of absence, predictability of absence and synchronisation of presence). At the individual level, proactive behaviours were found to have an impact. Finally, the whole framework is nested in and dependent on environmental characteristics, in particular the organisational setting. This thesis contributes to theory by outlining the double-faceted role of passive facetime in the relationship between FWA use and collaboration, by delineating how structural characteristics can provide teams with sufficient passive facetime, and by presenting a framework explaining the influence of FWA use on collaboration and the features that explain how and when this happens.

Keywords: Telework, part-time work, flexitime, facetime, context, collaboration, team

ACKNOWLEDGEMENTS

After years of hard work and persistence, several people deserve my deepest thanks for their support and patience along the way to the completion of this doctoral thesis.

First and foremost, I would like to thank my supervisor Professor Clare Kelliher for all her constructive feedback, guidance and support through the years. Her help has been invaluable on this journey.

I would also like to thank my panel members, Professor Emma Parry and Dr Noeleen Doherty for their feedback and role in steering the direction of the study.

I would like to thank my cohort members for sharing my woes and worries and for giving encouragement when encouragement was needed. Special thanks go to Roxanne Kutzer for peer-reviewing my coding.

My thanks also go out to the Chief Technology Officers of the three organisations who enabled me to collect the data I needed and all the great people I had the opportunity to speak to as a result.

Finally, my deepest thanks go to my family: My parents who have always encouraged my academic endeavours (and looked after my sons so many times so I could work); my sons who have learned to become more independent as their mother had less time for them; and my darling husband who has shared my joys and despairs, always maintained a level head and encouraged me to keep moving forward. His encouragement and support has been invaluable.

This is dedicated to you, my love.

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LIST OF ABBREVIATIONS

FWAs	Flexible working arrangements
I-P-O	Input-Process-Outcome
I-M-O-I	Input-Mediator-Outcome-Input
IT	Information Technology
SMEs	Small and medium-sized enterprises

1 INTRODUCTION

1.1 Chapter introduction

This thesis is concerned with the impact that use of flexible work arrangements (FWAs) has on collaboration within teams. In section 1.2. I discuss the rationale for studying this topic from theoretical, business and personal perspectives. In section 1.3. I provide definitions of the key terms in this thesis, namely FWAs, collaboration and teams. In section 1.4 I discuss the theoretical underpinnings of the research and in section 1.5 I outline the structure of the thesis. I conclude with a summary of the chapter in section 1.6.

1.2 Research rationale

The advancement of mobile and information technologies, together with greater interest in a better work-life balance and the increased participation of women in the workforce, has fuelled a proliferation of interest in FWAs in the last few decades (Gajendran and Harrison, 2007; Putnam, Myers and Gailliard, 2014; Allen, Golden and Shockley, 2015). Such arrangements give individual employees the opportunity to adjust where, when and for how long they work, and provide organisations with the possibility to attract, retain and motivate employees (Kossek, Thompson and Lautsch, 2015). In general, FWAs are considered to benefit individual employees by enabling them to have better control over their work-life balance and boundaries (Kelly and Moen, 2007). As such, the individual and organisational outcomes of these types of FWAs have been frequently studied and documented (for reviews see e.g. Baltes *et al.*, 1999; de Menezes and Kelliher, 2011). For example, the use of these types of FWAs has been associated with increased employee job satisfaction (e.g. Kelliher and Anderson, 2009), improved well-being (ter Hoeven and Zoonen, 2015) and reduced work-life conflict (Golden, Veiga and Simsek, 2006; Gajendran and Harrison, 2007; Kelly, Moen and Tranby, 2011).

However, while individuals may benefit, organisations need to find ways to accommodate and integrate these individual work arrangements into their work structures and routines (Lawrence and Corwin, 2003). Debates continue

regarding the cost of such initiatives to organisations. For example, while some argue that recent experiments on reduced-hours workweeks, such as in Sweden, have resulted in more productive and less stressed employees, others argue that the economic cost is too high (Chapman, 2017). Another frequently mentioned concern is how FWAs change the way employees work together (Cairns, 2013; Boell, Cecez-Kecmanovic and Campbell, 2016). Working flexibly reduces the amount of time an individual is physically present at the office with a risk of reduced interaction and physical contact between employees and co-workers as well as employees and supervisors. This reduction in facetime at the office (Van Dyne, Kossek and Lobel, 2007), as a result of teleworking, part-time working or working flexible hours, reduces the opportunities employees have to interact face-to-face and may lead to increased reliance on communication via other means, such as messengers, e-mail or telephone. However, for many organisations, real-time face-to-face social interaction is a pervasive and critical aspect of the work, especially when they rely heavily on coordination and collaboration between employees through team-based work. In fact, the controversial decision of companies such as Yahoo, Best, Buy and IBM to cancel teleworking programmes and call employees back into a central workplace reflects an opinion that employees are considered more collaborative and innovative when working in the same space and that collocation is key to collaboration (Cairns, 2013; Noguchi, 2017; Weller, 2017). Therefore, working arrangements that reduce the time employees spend face-to-face are perceived to have detrimental effects on collaborative activities. In addition, flexible workers may feel they miss out and become isolated and distant from the social environment in their organisation as they are not able to participate in interactions as frequently as office-based workers (Kossek, Thompson and Lautsch, 2015).

Another concern is that the use of FWAs may result in negative reactions from other employees. These may arise because opportunities to work flexibly may not be granted to all employees (Lautsch, Kossek and Eaton, 2009; Mahler, 2012) or because these arrangements result in work overflowing to those not working flexibly (Golden, 2007). Empirical research suggests telework

negatively affects relationships with co-workers (e.g. Gajendran and Harrison 2007; Golden, 2007), creates complex behavioural dynamics in workplaces (Kurland and Egan, 1999; Lautsch, Kossek and Eaton, 2009) and alters relationships with supervisors (Golden, 2006). Similarly, part-time workers are frequently reported to experience marginalisation and stigmatisation, and to be considered less dedicated and committed employees (Bessa and Tomlinson, 2017). Such issues may also translate to workgroups or work units, for example through willingness to share knowledge or cooperate (Cramton, 2001).

Both the above-mentioned concerns reflect the dilemma of whether an HR practice that benefits individuals may have unintended consequences for the collective (Taskin and Devos, 2005). While flexible workers may experience benefits, their co-workers may not and the work unit may suffer. Yet, the impact of FWA use within work units and teams, especially highly collaborative and interdependent ones, remains a neglected area of research, regardless of calls from numerous scholars to extend research into this area (Lawrence and Corwin, 2003; Van Dyne, Kossek and Lobel, 2007; Boell, Cecez-Kecmanovic and Campbell, 2016). This is a significant omission, given the growing reliance on collaboration between individuals in organisations and increased emphasis on team-based and flat structures (Lepine and Van Dyne, 2001; Takeuchi, Yun and Wong, 2011).

In this thesis, I will address this gap. I explore how an individual FWA that differentiates an individual from the rest impacts on collaboration within teams. The focus is on understanding the relationship between FWA use and collaboration within teams in light of the aforementioned concerns. The main research question that I seek to answer is: How does the use of FWAs impact on collaboration within teams?

1.2.1 Personal interest

My enthusiasm for the subject of flexible work stems from a time more than 10 years ago when, during my employment as an operations manager for a travel retailer, I moved from working full-time to a part-time arrangement. I experienced this change very positively from a personal perspective and,

interestingly, also felt that I was doing the same amount of work, only in less time. A few years later this experience led me to focusing my MSc thesis in the field of Strategic Management on the topic of work intensification when working part-time. In a qualitative study involving interviews with numerous individuals, I explored whether part-time work made employees feel as if they were working more efficiently. I concluded that various contextual factors, such as the public context, the organisational culture, and management and colleague response, impacted on whether the respondents felt they were more efficient or not. Furthermore, I found that individual factors such as motivations, life situation and personality also played a role in these perceptions. My findings highlighted the importance of context in perceptions of FWAs and awakened my interest in the role that the people around the flexible workers play in the way they experience working flexibly. I then became interested in the reverse effect – the implications of FWA use for the co-workers working with flexible workers – when Yahoo’s Marissa Mayer called teleworking employees back into the office in 2013, suggested to be because she wanted to encourage face-to-face interactions and create an environment of innovation and collaboration (Allen, Golden and Shockley, 2015). This controversial decision sparked discussions in the Press on the importance of collocation when needing to collaborate (e.g. Graber, 2015) and awakened my interest in understanding whether occasional flexible working, such as working from home, would indeed be experienced as detrimental to collaboration. In the years since, numerous other organisations, including IBM in 2016, have revoked flexible work policies and now require employees to work face-to-face in an office, further igniting debates on the implications of flexible work and highlighting the importance of this topic (*HR Specialist: Compensation & Benefits*, 2013; Allen, Golden and Shockley, 2015; Weller, 2017). The idea that physical presence at an office is essential to collaboration seems to be taking a stronger hold, which has motivated me to try to build an understanding of the impact of FWA use, the actual need for and value of physical presence at an office and the implications of reducing it, in contexts where the need to collaborate is high.

1.3 Defining terms

Three terms central to the research issue need to be defined to provide clarity for the discussion as I move forward. These are flexible work arrangements, collaboration and teams, which will be defined in the following sections.

1.3.1 Flexible work arrangements (FWAs)

FWAs have been defined as mutual arrangements made between employers and employees over when, where and how to work to meet the organisation's needs while at the same time enabling employees to better balance their work and non-work lives (Thompson, Payne and Taylor, 2015; Menezes and Kelliher, 2016). In some cases, FWAs are mandatory because they are imposed on employees by organisations by, for example, reducing hours worked, implementing job rotation or introducing teleworking to reduce real estate costs (Menezes and Kelliher, 2011). In other cases, they are voluntary and implemented to increase the ability of employees to make choices or control their work lives – particularly the timing, location and amount of their work (Kelly and Moen, 2007). The goal is to provide employees with resources to better manage different spheres of their lives and, through doing so, organisations will indirectly benefit through improved employee outcomes (Thompson and Prottas, 2005; Hill *et al.*, 2008; Menezes and Kelliher, 2011, 2016). In this thesis I focus on voluntary FWAs, adopted by employee choice (e.g. Kossek, Barber and Winters, 1999; Kelliher and Anderson, 2009), as I seek to understand how an arrangement that is adopted to allow an individual to better manage their work-life balance (while also reducing their presence at the office) affects their collaboration with other employees. This is likely to produce a different dynamic from when FWAs are mandatory for everyone in the team or organisation.

I furthermore focus on the three most widely implemented FWAs in Europe and Northern America: flexible working hours, telework and part-time work (Shockley and Allen, 2007; Thompson, Payne and Taylor, 2015). The three types of FWAs allow an individual employee to vary their schedule around the traditional 9-5 workday and 40-hour workweek, by working fewer hours (part-

time arrangements), working part of the workweek from another location (telework) or choosing their own hours of work, within boundaries set by the organisation (flexible working hours or flexitime). The use of these practices reduces flexible workers' presence at the office, to varying extents, which may lead to difficulties when collaboration is needed among employees.

I define part-time work as professional part-time work, which entails a reduction in workload and hours of work with a corresponding pay cut and is a voluntary choice by employees, in many cases to give more attention to personal, family, and/or community commitments (Lirio *et al.*, 2008; Kossek *et al.*, 2016). Professional part-time work is distinct from the more frequently studied definition of part-time work as lower-skilled, insecure and hourly paid work in which employees have little control or career aspiration (Lee, Macdermid, Williams and Buck, 2002; Kossek and Lee, 2008; Kossek *et al.*, 2016). Professional part-time workers are not opting out of a career track, but rather choose to reduce their hours of work in order to accommodate other life responsibilities (Kossek and Lee, 2008). Professional part-timers therefore define themselves as part-time workers because they work fewer hours than the norm of the organisation, but still retain significant responsibilities. I chose to focus on professional part-time workers as this definition implies that part-time workers are not in any way lower-skilled or inferior to other employees and carry as much knowledge and weight to collaboration efforts as other employees.

I define telework as working away from the office (from a location of employees' choosing, such as the home) for some part of the workweek, in most cases for personal reasons, while keeping in contact using information technology (Bailey and Kurland, 2002; Allen, Golden and Shockley, 2015). This definition excludes virtual work, which is usually done in geographically dispersed teams that do not interact face-to-face, and dispersed, remote or mobile work, which more frequently refers to work done at different business units or sales work done on the road (Allen, Golden and Shockley, 2015). The implication of this definition for this study is that teleworkers may conduct their work regularly or occasionally away from the office but in general they can still interact and

collaborate face-to-face with co-workers, as opposed to that generally not being a possibility in virtual work (for a more in-depth discussion on virtuality, virtual teams and FWAs, see section 2.3.3).

Finally, I define flexible working hours (also frequently labelled flexitime) as discretion over the temporal boundaries of work (Thompson, Payne and Taylor, 2015). In practice, flexitime schedules usually involve core hours when employees are required to work (e.g. 9-15 Mondays to Fridays) but employees have discretion over when to conduct work outside these core hours (Shockley and Allen, 2007; Thompson, Payne and Taylor, 2015). The implication of such a definition of flexible working hours is that working flexible hours results in less temporal overlap with other employees (i.e. the time that all employees are working) during which employees can interact and collaborate. The extent to which this happens depends on whether organisations enforce a period of core hours or not.

The three types of FWAs (telework, flexible working hours and part-time work) are distinct practices. This means that although flexible working hours and telework both include employee control (over time and place of work) it does not necessarily mean that an employee can telework at a time of their choosing and that an employee working flexible hours can conduct their work away from the office (Thompson, Payne and Taylor, 2015). Similarly, working part-time does not necessarily mean these employees can work at days or times of their choosing. However, the use of each of the three practices may impact on collaboration within teams, for example, as a result of reduced facetime or because of reactions from others.

In summary, in this study, FWAs are defined as adopted by employee choice and as providing employees with control over when, where and how much they work. The focus is on telework, flexible working hours and professional part-time work (from here on referred to as part-time work), the three most widely implemented types of FWAs, all of which result in reduced presence at the office with possible implications for collaboration within teams.

1.3.2 Collaboration

In this thesis, I adopt the definition of collaboration as proposed by Bedwell *et al.* (2012), where collaboration is defined as an ongoing active process that employees engage in, rather than an outcome or a static entity. Collaboration can occur between two individuals or a group of individuals, requires interdependent effort focused on joint activities, such as solving a problem, and requires a commitment of collaborating entities to at least one shared goal (Bedwell *et al.*, 2012). Collaboration is also reciprocal in nature, meaning that the entities work and contribute interdependently to their joint goal, rather than one entity delegating or dictating to others. Therefore, collaboration is a back and forth reciprocal process to which involved entities contribute in order to achieve an end result (Bedwell *et al.*, 2012). According to this definition, collaboration is an evolving higher-level process that incorporates several other constructs including cooperation, coordination and teamwork. It involves social interactions and joint activities between entities and may be dependent on relationships, values, affects, cognitions and motivations among them (Marks, Mathieu and Zaccaro, 2001; Bedwell *et al.*, 2012; Salazar and Salas, 2013).

Since FWA use reduces the amount of physical presence of flexible workers at the office, it may impact on how individuals collaborate as the ability to interact and engage in activities may be altered. However, collaboration can occur between any composition of entities or groups of entities, across levels and within or across organisations. In this thesis I focus on collaboration between individuals within a demarcated setting, namely teams.

1.3.3 Teams

Teams are increasingly used to promote organisational success in today's economy. This is based on arguments that teams allow for greater organisational productivity, adaptability and creativity, and through individual yet socially connected work roles more innovative and wide-ranging solutions can be offered to organisational problems (Hackman and Oldham, 1976; Cohen and Bailey, 1997; Salas, Sims and Burke, 2005). In this thesis, I focus on teams within organisational settings. I define teams as groups of individuals that share

one or more common goal, exhibit interdependencies, need to interact socially and are embedded in and operate within an organisation, which determines their role and purpose, defines their membership and influences their functioning (Mathieu, Maynard, Rapp and Gilson, 2008; Hollenbeck, Beersma and Schouten, 2012). Teams need to integrate and share knowledge and information, and collaborate in order to be effective (Salas, Cooke and Rosen, 2008). Team effectiveness models, such as McGrath's (1964) input-process-outcome (I-P-O) model, explain how input factors such as team composition (e.g. team members' characteristics and competencies) and team design impact on how team members behave, interact and collaborate, and how this translates into outcomes (e.g. team effectiveness) (Lepine *et al.*, 2008) (for a more in-depth discussion of team effectiveness models see section 2.3.1).

An important component of the definition of teams, and of relevance to the topic of this thesis, is the level of interdependence within teams. Interdependence refers to how much team members need to rely on one another, cooperate, collaborate and interact in completing their work or task (DeChurch and Mesmer-Magnus, 2010). At lower levels of interdependence, little collaboration is needed between team members but at higher levels of interdependence the need for collaboration is high. It is therefore likely that FWA use has a greater impact on collaboration in teams when team members are highly interdependent in their work and need to interact frequently to achieve the team goal. Some scholars have argued that it is the level of interdependence and integration of team members that differentiate teams from workgroups (Cohen and Bailey, 1997), as well as more reliance on dynamic interactions (Salas, Burke and Cannon-Bowers, 2000). However, commonly, the terms workgroups, groups and teams are used interchangeably in the literature (Kozlowski and Ilgen, 2006). Therefore, I will refer to workgroups or groups when the studies in question use that term and otherwise I will refer to teams.

1.4 Theoretical underpinning

The idea that individual use of FWA use may have an impact on collaboration within teams is supported by two distinct theories, namely the social information

processing perspective (Salancik and Pfeffer, 1978) and media richness theory (Daft and Lengel, 1986). I will discuss these next and return to them at various points in this thesis.

1.4.1 Social information processing perspective

The social information processing perspective (Salancik and Pfeffer, 1978) emphasises how the social context in which an individual is situated (e.g. organisational culture, supervisors, co-workers) influences individual attitudes and behaviours. According to the social information processing perspective, the social context affects individual attitudes and needs because it enables individuals to understand what is socially acceptable, such as acceptable beliefs, attitudes and reasons to act. The social context also guides individuals to significant information, provides expectations of behaviour and possible consequences of behaviour (Salancik and Pfeffer, 1978). The impact of context on organisational behaviour has become a matter of increasing attention in the last few years (e.g. Johns, 2006) and the social information perspective has provided foundation of several studies exploring work-life initiatives and the role of social context (e.g. Gajendran, Harrison and Delaney-Klinger, 2015; McAlpine, 2015).

In the context of this thesis, the social information processing perspective highlights how team members adapt their attitudes and behaviours based on how they interpret and make sense of their work environment. This includes their fellow team members, team leaders and the cultural context, all of which provide cues about what is considered important and accepted in the team. Therefore, other members are an important source of reference and impact on how individuals make sense of their work environment. This happens through direct interactions but also through interpretation and evaluation of social and environmental cues, such as other team members' reactions (Wech, Kennedy and Deeter-Schmelz, 2009; McAlpine, 2015). Because team members constantly observe and interpret their work environment, they also interpret norms that may have been created in teams as well as organisational norms and culture. For example, individuals may make judgements regarding flexible

working and the need to be physically present at the office to collaborate, based on such norms. FWAs may therefore be interpreted differently in a team that is accustomed to a full workday physical presence at an office, and in a team that is accustomed to the frequent use of flexible working among members and has become accustomed to dealing with it (Gajendran, Harrison and Delaney-Klinger, 2015). The social information processing perspective therefore emphasises that the impact of FWA use on collaboration within teams is dependent on individual interpretations in the team of other members as well as the norms and cultural elements in the team and organisation.

1.4.2 Media richness theory

Media richness theory places different methods of communication on a continuum depending on their richness. Richness is determined by the extent to which communication methods can provide emotional, attitudinal and normative cues, immediate feedback (i.e. synchronous interactions), the extent to which they can reduce uncertainty and clarify equivocality (Daft and Lengel, 1986). According to this theory, face-to-face interactions are the richest media, followed by communication via video, telephone and finally electronic communication. Media richness theory suggests that because FWA use results in reduced presence at the office, team members may have to collaborate via less rich media such as telephones or electronic communication channels, which may reduce the ability of team members to communicate rich information and interact back and forth. According to media richness theory, this would translate into a negative effect on collaboration.

1.5 Outline of thesis

In this chapter I have discussed the need to explore the impact of FWAs on collaboration within teams. I defined the key constructs, FWAs, collaboration and teams, and presented two theories, social information processing perspective and media richness theory, that underpin the subject of study in this thesis: How FWA use impacts on collaboration within teams.

In Chapter 2 I discuss the two main bodies of literature that inform this thesis, i.e. FWAs and teams, with particular focus on the development of team effectiveness models and how collaboration is situated within this theory. I also provide an overview of the literature on virtual teams, which shares similarities with FWA use within teams. I then review and synthesise the existing evidence base that addresses the impact of FWA use on collaboration. The review findings revealed that studies examine various aspects that may influence collaboration, such as legitimacy, relationship quality, marginalisation and communication. Review findings also suggested an important influence of frequency of FWA use and context. However, no studies appear to have explored the impact of FWA use on collaboration. Review findings are applied to Bedwell *et al.*'s (2012) framework of collaborative performance and suggest a negative impact on collaboration, which depends upon various contextual features. As a result an additional research question was added, resulting in two research questions being taken forward to the main study: How does FWA use impact on collaboration within teams? What contextual features explain this relationship?

In Chapter 3 I explain the philosophical backdrop to the research and the research strategy adopted. I discuss how an exploratory study was conducted, to verify whether inferences made in the literature review were justified. Findings reaffirmed the two research questions and highlighted a need for an exploratory research design. I then explain the methodology adopted for the main study, which consisted of multiple case studies. I also explain how data were collected and how these were analysed.

In Chapter 4 I present the findings from the main study. Findings revealed that FWA use affected collaboration through reduced passive facetime of team members, which refers to their passive presence at the office without necessarily engaging in any interactions with each other. Six sets of contextual features were found to influence this relationship, at the individual, team and organisational level. Findings were integrated into a framework of collaborative performance set forth by Bedwell *et al.* (2012) and a theoretical multi-level

framework is presented explaining the impact of FWAs on collaboration and the contextual features that impact on how and when this happens.

In Chapter 5 I analyse each part of the framework in line with previous work. I outline how FWA use affects collaboration through passive facetime and how the three types of FWAs were perceived to have the same impact, as absent members were perceived to be out of reach and out of touch. I further discuss the role of passive facetime as an impression management tool as well as an enabler of informal collaboration, especially through spontaneous interactions. I then place the various contextual features in alignment with previous work on FWAs as well as on virtual teams.

In Chapter 6 I summarise the thesis, discuss the theoretical contributions of my study, the implications for practice and limitations, and provide suggestions for future research. I then conclude the thesis.

1.6 Chapter summary

In this chapter I have provided a rationale for the research topic, leading to a research question and outlined my personal motivation for studying this topic. I defined the three main constructs of this thesis: FWAs (telework, part-time work and flexible working hours), collaboration and teams. I presented the social information processing perspective and media richness theory, which underpin why FWA use may affect collaboration within teams. I then concluded with an outline of the structure of the thesis.

2 LITERATURE REVIEW

2.1 Chapter introduction

The research topic is set in two fields of literature; on the one hand it is set in the literature on FWAs and on the other in the team literature. In the first two sections I introduce these two fields of literature. As such, in section 2.2 I report the key developments and limitations of the literature on FWAs. In section 2.3 I outline the main team effectiveness models that underpin research on teams (2.3.1) and subsequently situate collaboration within such models (2.3.2). I then outline the virtual teams literature as it carries similarities to FWA use within teams, and highlight similarities and differences between FWA use within teams and virtuality in teams (2.3.3). In section 2.4 I start by reporting the constructs, methodology and analysis procedures of a literature review where I explored the connection between the two fields of literature: FWA use and collaboration within teams (sections 2.4.1 and 2.4.2). In sections 2.4.3-2.4.7 I discuss the findings of this review. I start by introducing the main characteristics of the research stream (2.4.3). I then present the findings in four sections: impact of telework (2.4.4), impact of flexible working hours and part-time work (2.4.5), the role of frequency of use (2.4.6) and the role of organisational context, supervisors and work-related context (2.4.7). In section 2.5 I draw the findings from the review together and discuss the possible impact on collaboration as defined by Bedwell *et al.* (2012). I conclude by setting forth research questions to take into the main study.

2.2 Flexible work arrangements

Research on FWAs has grown substantially over the last few decades in line with growing interest in FWAs in the public sphere (Baltes *et al.*, 1999; Glass and Finley, 2002; Chang, McDonald and Burton, 2010). The literature on FWAs can broadly be divided into two parts: studies that look at the adoption of FWAs and studies that examine outcomes from FWAs. The stream of literature on FWA adoption discusses organisational reasons and motivations for adopting or offering FWAs (e.g. Dulk, Peters and Poutsma, 2012; Wang and Verma, 2012)

and individual reasons and motivations for choosing to request or adopt FWAs (e.g. Lambert, Marler and Gueutal, 2008; McNamara *et al.*, 2012; Shockley and Allen, 2012). However, the focus of this thesis is on use rather than antecedents to use. Therefore I will focus on the group of studies that examine outcomes from FWAs in this section.

This group of studies can be divided into studies on individual outcomes and studies on organisational outcomes. The former are generally focused on the role of FWAs in the interaction of the work and non-work spheres and how FWAs impact on various individual outcomes such as work-life conflict (Allen, Johnson, Kiburz and Shockley, 2013), happiness (Atkinson and Hall, 2011) and well-being (Moen *et al.*, 2016). The literature stream on employer outcomes from FWAs is characterised by attempts to make a business case for their use. Studies in this group examine the relationship between FWAs and outcomes relevant to organisations, such as job satisfaction (Virick, Dasilva and Arrington, 2010), employee performance (Menezes and Kelliher, 2016), organisational commitment (Kelliher and Anderson, 2009) and organisational performance (Wood, de Menezes and Lasaosa, 2003). Overall, research on outcomes from FWAs has produced dispersed findings. As such, some studies have reported a negative relationship between various types of FWAs and work-family conflict (Allen, 2001; Golden, Veiga and Simsek, 2006) while others have not found significant relationships (e.g. Batt and Valcour, 2003) or even suggested that FWAs may increase work-family conflict (Hammer *et al.*, 2005; Blair-Loy, 2009). Similarly, reviews that have attempted to summarise findings from research on organisational benefits from FWA implementation and use have not found evidence to support a clear business case (Glass and Finley, 2002; Beauregard and Henry, 2009; Menezes and Kelliher, 2011). The dispersed findings of current research on FWAs is likely to reflect several limitations of the evidence base.

The first limitation in the literature on FWAs stems from the fact that FWAs is an umbrella term as different types of flexible work practices have been given the label of FWAs, such as shift-work and contract work (Raghuram, London and

Larsen, 2001), compressed workweeks (Baltes *et al.*, 1999), schedule flexibility (McNall, Masuda and Nicklin, 2010) and part-time work (Walsh, 2007). In addition, there is a tendency in the literature to group different types of FWAs together without being clear on which outcomes stem from which practice and in some cases looking only at a group effect (Glass and Finley, 2002; Menezes and Kelliher, 2011). Given the variety of different FWAs, scholars have argued that it is questionable whether they can be expected to produce similar outcomes and if they can even be compared (Beauregard and Henry, 2009).

A second limitation is that measures of FWAs vary greatly. Some studies look at how availability or perceived availability of FWAs translates into outcomes (e.g. Scandura and Lankau, 1997; Richman *et al.*, 2008) while others look at actual use or uptake (Anderson and Kelliher, 2009; Gajendran, Harrison and Delaney-Klinger, 2015). Different measures may produce different outcomes as actually working flexibly produces different understandings of FWAs than perceiving that one possibly could make use of existing policies (Allen *et al.*, 2013). Furthermore, scholars have argued for a better distinction between formal arrangements, negotiated through an official policy, and informal arrangements, negotiated *ad hoc* with line managers (Atkinson and Sandiford, 2016; Menezes and Kelliher, 2016). Similarly, others have argued for better distinctions between voluntary use and mandatory use of FWAs (e.g. to save on office space) (Thatcher and Zhu, 2006; Allen, Johnson, Kiburz and Shockley, 2013). Overall, these issues lead to mixed findings and difficulties in the comparison of current research.

A third limitation is the methodological dispersion in the literature, especially in terms of samples and methods. In general, the literature on FWAs suffers from the same issues as the HRM literature in that the majority of studies are quantitative (Bessa and Tomlinson, 2017). Most work is cross-sectional and although samples vary both in size and composition, in general the majority of studies are on professionals or knowledge workers in US or UK contexts (Eby *et al.*, 2005; Beauregard and Henry, 2009; Chang, McDonald and Burton, 2010; Menezes and Kelliher, 2011). Scholars have criticised how research on FWAs

fails to take diversity into account, including different job types (Ollier-Malaterre and Andrade, 2016) and sociodemographic factors (Özbilgin, Beauregard, Tatti and Bell, 2011), therefore, providing a limited view of the implications of FWAs in various demographic and occupational groups.

A fourth limitation is the role of contextual factors in study findings. National cultures have been shown to play a role in employee perceptions of FWAs (Ollier-Malaterre, 2009; Masuda *et al.*, 2012; Ollier-Malaterre, Valcour, Den Dulk and Kossek, 2013). Likewise, family-supportive work environments, colleague support and supervisor support have also been shown to generate positive employee and employer outcomes (Allen, 2001; Thompson and Prottas, 2005). Organisational norms, such as those that value face-to-face presence at the office and long hours, have also been shown to impact on employee behaviours and may result in the marginalisation of flexible workers (e.g. Munsch, Ridgeway and Williams, 2014). Contextual factors, such as national, organisational and cultural contexts, therefore play an important role in study findings, rendering study comparison difficult.

A fifth limitation is the tendency in studies to date to look at the individual level of analysis, in particular on flexible workers (Bailey and Kurland, 2002; Golden, 2007). A number of studies look at the organisational level and have attempted to establish links between FWAs and organisational performance with mixed findings (see Beauregard and Henry (2009) and de Menezes and Kelliher (2011) for reviews). However, there appears to be limited work that looks at the group level (Van Dyne, Kossek and Lobel, 2007). The links between FWA use in workgroups or teams and subsequent outcomes such as group performance therefore do not appear to have been established (Bélanger, Watson-Manheim and Swan, 2013).

In summary, current research on employee outcomes from FWAs generally looks at work-life balance constructs while current research on employer outcomes tries to establish links between FWA and benefits to organisations. Overall, the literature on FWA outcomes suffers from a lack of clarity in the conceptualisation of FWAs, which translates into measurement and

methodological issues. Furthermore the majority of studies fail to acknowledge contextual influences. Since studies rarely take social context into account they also predominantly focus on the individual as a level of analysis, which leaves group-level outcomes of FWAs under-researched. In the following section I will discuss the second field of study informing this thesis, i.e. teams, with a specific focus on collaboration.

2.3 Collaboration within teams

In this thesis, I look at how FWA use impacts on collaboration within teams. The literature on teams has set forth numerous theoretical models on team functioning, in which collaboration is generally defined as a process (Mathieu, Maynard, Rapp and Gilson, 2008). In this section I will start by presenting an overview of the main team effectiveness models and subsequently present a framework of collaboration that is grounded in this literature.

2.3.1 Team effectiveness models

The literature on teams has set forth several models that explain how teams work together to achieve an outcome (Marks, Mathieu and Zaccaro, 2001; Ilgen, Hollenbeck, Johnson and Jundt, 2005). Much of this work is built on McGrath's (1964) I-P-O model to study team effectiveness. The I-P-O model argues that input factors at an individual level (e.g. members' characteristics, attitudes), team-level factors (e.g. team structure, team size) and environmental factors (e.g. task structure, organisational culture), both enable and constrain team processes. Processes are defined as the activities and interactions that team members engage in and are the link between team inputs and outcomes (McGrath, 1964; Hackman, 1987). Team processes include communication, collaboration, coordination, conflict and feedback (Mathieu, Maynard, Rapp and Gilson, 2008). Outcomes, such as team performance, are the results of team processes and can be measured in various ways, including quality of output and quantity of output (Mathieu, Maynard, Rapp and Gilson, 2008). Since it was first introduced, the I-P-O model has been modified and extended in at least three important ways.

First, scholars have argued that the mediational factors between input and outcomes are not all processes. Cohen and Bailey (1997) differentiated processes that involve interactions between people from group psychosocial traits – the shared understandings and beliefs of team members. Marks, Mathieu and Zaccaro (2001) differentiated processes involving members' actions from emergent states – the motivational, cognitive and affective states of teams. This differentiation has since taken hold in the teams literature, where frequently studied emergent states include team cohesion, team empowerment, team cognition and team climate (Mathieu, Maynard, Rapp and Gilson, 2008). Team processes describe the behavioural, verbal and interactional activities undertaken by team members to achieve the team's collective goals (DeChurch and Mesmer-Magnus, 2010). Another extension to the I-P-O model has been to delineate processes into taskwork and teamwork (e.g. Crawford and Lepine, 2013). Taskwork refers to work-related activities such as performing specific tasks that need to be completed to achieve the team goal. Teamwork refers to adaptive, dynamic behaviours, attitudes and cognitions that are necessary for these tasks to be accomplished, and underpins how tasks and goals are achieved. Team performance is then seen as a multilevel process that emerges as team members manage their taskwork processes (the “what”) and teamwork processes (the “how”) (Crawford and Lepine, 2013; Salas *et al.*, 2015). Ilgen *et al.* (2005) argued for collectively labelling processes and emergent states as mediators to allow for the capture of the broad range of mediating variables that may explain variability in outcomes and address the fact that many processes and emergent states have indistinct boundaries and overlaps (Ilgen, Hollenbeck, Johnson and Jundt, 2005) (see the I-M-O model with process and emergent states distinction in Figure 2-1). Many of these have been found to be highly correlated and the lack of clear differentiation between the various constructs has been suggested as being one reason why research on teams has not accumulated effectively (Lepine *et al.*, 2008; Mathieu, Maynard, Rapp and Gilson, 2008).

Second, the original I-P-O model has been extended to incorporate the role of time. Extensions that have theorised on the role of time can be categorised as

adopting either developmental or episodic approaches (Mathieu, Maynard, Rapp and Gilson, 2008). Developmental approaches suggest teams develop and mature over time and include Ilgen *et al.*'s (2005) Input-Mediator-Outcome-Input (I-M-O-I) model. Ilgen *et al.* (2005) added a cyclical causal feedback loop to the I-P-O model, illustrating that teams go through stages as they develop, ranging from forming (early stages of team development, trust, planning and structuring), functioning (when the team develops experience through working together) and finishing (when the team completes its task). An episodic approach highlights that processes may be important at different times during performance episodes of teams (Marks, Mathieu and Zaccaro, 2001). As such, Marks, Mathieu and Zaccaro (2001) divided processes into transitional (actions undertaken in-between team projects or tasks), action (actions undertaken as the team works together to achieve their goal) and interpersonal processes (management of interpersonal interactions between team members). Their model emphasises the fact that teams are engaged in multiple tasks, such as goal-directed activities or performance episodes, at the same time and that over time performance is best regarded as a series of multiple performance episodes which contribute to a bigger goal (Marks, Mathieu and Zaccaro, 2001; Lepine *et al.*, 2008).

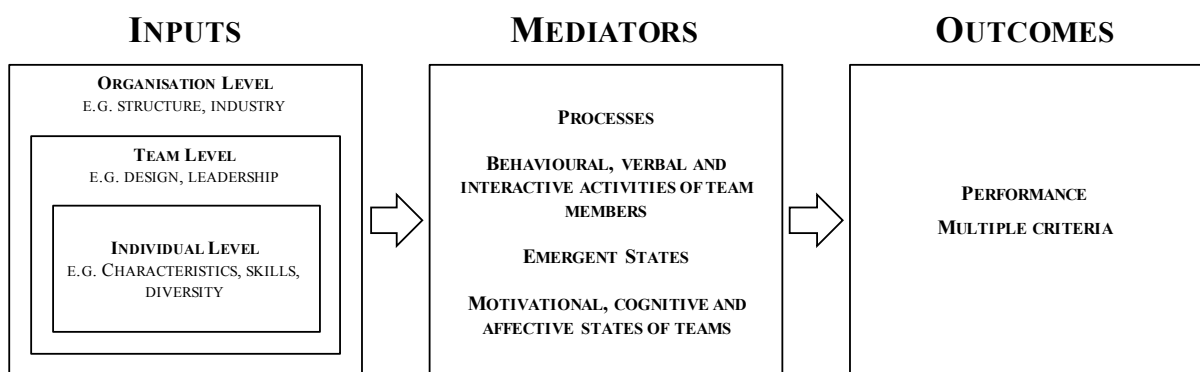


Figure 2-1 I-M-O model (Marks, Mathieu and Zaccaro, 2001)

Third, scholars have extended the I-P-O model by positioning it within a broader context. For example, Cohen and Bailey (1997) described how environmental factors (e.g. industry) could be drivers of inputs such as team composition, organisational context and task design; and Kozlowski and Ilgen (2006) argued

for the importance of considering how teams are embedded in a broader systems context (environmental complexity, contextual contingencies) that drives the demands they face. Kozlowski and Ilgen (2006) argue that when environmentally driven task demands align with team processes, a team is effective. More recently, Maloney *et al.*'s (2016) review found that although external context is increasingly being studied all along the I-P-O causal chain, current research would benefit from more theorising on the nesting of teams in various layers of context to help explain relational, behavioural, and team outcomes, for example through more qualitative work. Furthermore, some scholars have argued that the I-P-O model fails to consider the multilevel nature of teams – that individuals make up teams, which are then nested in organisations, which are nested in environments (e.g. Mathieu *et al.*, 2008). Humphrey and Aime (2014) argue that research needs to accommodate the fact that teams are made of individuals, who may have differences, have relationships and engage in activities that connect them. They also argue for the acknowledgement of teams' different situations, and the implications of the contexts and environments in which they exist. Such an approach acknowledges the multiple levels within teams – that teams are composed of individuals who have dyadic relationships with other members, which then affect the team, including team behaviours and climate (Humphrey and Aime, 2014).

In summary, most research on teams and team effectiveness is grounded in the I-P-O model or its various extensions. The three extensions have provided better delineation of mediators, added a temporal dimension to highlight that teams evolve over time and emphasised the multi-level nature of teams, i.e. that they are comprised of individuals who make up a team, which is then nested in a broader context.

2.3.2 A theoretical framework of collaboration

Collaboration has been conceptualised in a myriad of ways in studies to date, resulting in deficiencies in the accumulation of research on the construct (Bedwell *et al.*, 2012; Salazar and Salas, 2013). The lack of a clear definition of collaboration has resulted in it being confounded with constructs such as

cooperation, coordination and teamwork (Thomson, Perry and Miller, 2009; Bedwell *et al.*, 2012). Similarly, research on collaboration has adopted a diverse range of theoretical perspectives (Thomson, Perry and Miller, 2009). In this thesis I adopt a framework of collaboration which is grounded in the team effectiveness literature, reviewed in the previous section. Within the traditional I-P-O model (as well as extended versions of it) collaboration and related constructs such as coordination and cooperation are generally considered processes and therefore mediators between inputs and outcomes (e.g. Kozlowski and Ilgen, 2006; Mathieu *et al.*, 2008). However, Bedwell *et al.*'s (2012) theoretical framework of collaboration, which is built on Ilgen *et al.*'s (2005) I-M-O-I model, views collaboration as consisting of both collaborative behaviours and emergent states. This is based on the premises that together emergent states and collaborative behaviours make up the collaborative process. It also addresses the possible correlations between the different constructs as findings may be interpreted a result of a construct under investigation while in fact it may be a result of another construct (found to be highly correlated to the construct under investigation in previous work). Because emergent states and collaborative behaviours are closely related, they need to be considered as proximal inputs and a part of the collaborative cycle, and the cyclical effects between them needs to be acknowledged (Bedwell *et al.*, 2012) (see Figure 2-2).

Six key behaviours are considered of relevance in a theoretical framing of collaboration: leadership behaviours, task execution behaviours, information processing behaviours, extra-role behaviours, sensemaking behaviours and adaptive behaviours (Bedwell *et al.*, 2012). Leadership behaviours aim at guiding others and coordinating efforts (e.g. conflict management, task-related behaviours) (Morgeson, Derue and Karam, 2010). Task execution behaviours are those directed towards completion of the task at hand to achieve the collaborative goals and carries strong similarities to taskwork (see section 2.3.1) (Crawford and Lepine, 2013). Information processing behaviours refer to converting, storing, processing, and retrieving of information and knowledge within a collaborative entity (Hinsz, Tindale and Vollrath, 1997). Extra-role

behaviours refer to behaviours such as helping behaviours in teams, which contribute to performance but are not predetermined or formally required (Demerouti, Bakker and Gevers, 2015). Sensemaking behaviours refer to the sharing, discussion and interpretation of such knowledge (Balogun and Johnson, 2004; Luscher and Lewis, 2008) and, finally, adaptive behaviours refer to behaviours in complex and uncertain settings, that aid in achieving the end goal (Griffin, Neal and Parker, 2007).

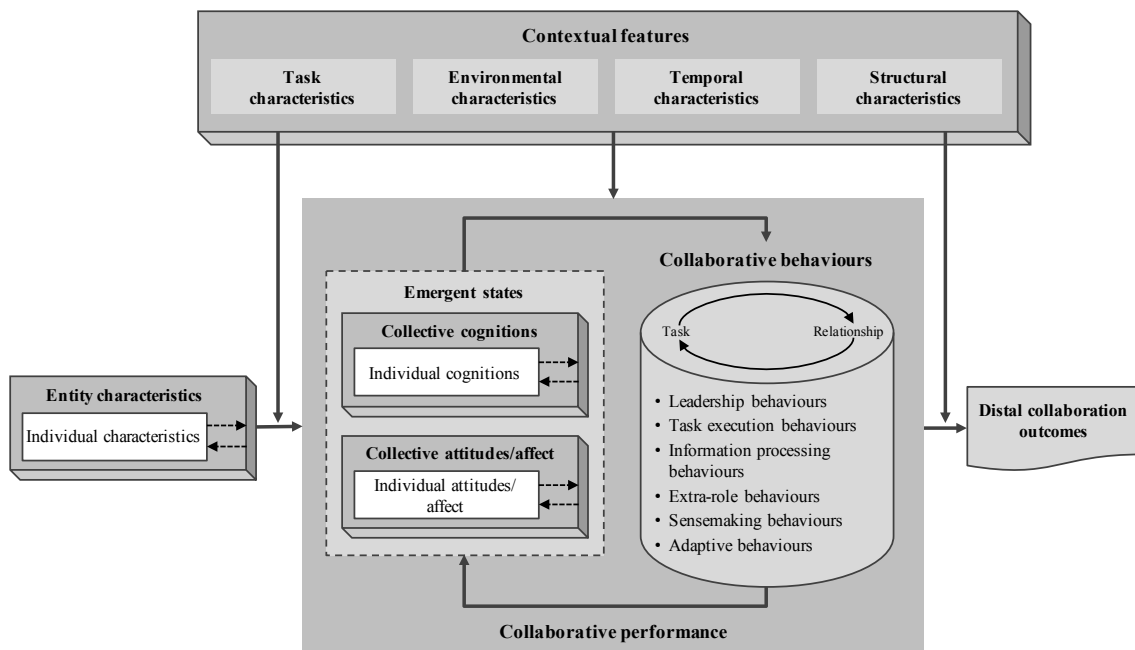


Figure 2-2 Bedwell et al.'s (2012) framework of collaborative performance

Bedwell *et al.*'s (2012) framework is presented in full in Figure 2-2. On the input side of the framework, Bedwell *et al.* (2012) illustrate that the configuration of similarities and differences between individuals contributes to the characteristics of the entity in which they are embedded (e.g. a team). This then impacts on the behavioural processes and emergent states, which constitute the collaborative performance. The collaboration cycle therefore depends on the composition of the individuals of which the team is composed (Bedwell *et al.*, 2012). They also highlight the multi-level nature of the collaboration process itself, as individual cognitions and attitudes are what constitute collective cognitions and attitudes, which then make up emergent states (which then again impact on collaborative behaviours in a cyclical fashion). Therefore, not only inputs are multi-level but

the collaboration process itself depends on how individuals interact and develop relationships with each other.

The framework furthermore shows how various contextual features and characteristics impact on the collaboration process. As such, Bedwell *et al.* (2012) suggest that the types of tasks a team is involved in, environmental characteristics (e.g. organisational culture or environmental uncertainty), temporal elements (e.g. duration of performance episodes or team lifespan) and structural characteristics (e.g. how an entity engaging in collaboration is set up including temporal and physical distribution of members) all play a role in the collaborative cycle.

In the end, the outcome of this process can be a product or a feature – depending on the goal of the collaboration process. However, Bedwell *et al.*, (2012) argue that outcomes can also be more proximal, such as team satisfaction, which may then feed back into the collaboration framework, creating a cyclical effect.

In summary, Bedwell *et al.* (2012) set forth a theoretical framework of collaboration, which is based on the I-M-O-I model (Ilgen, Hollenbeck, Johnson and Jundt, 2005), and highlights how collaboration is an encompassing construct which includes behaviours as well as cognitions of team members. It highlights that collaboration is multi-level and consists of interactions between individuals who constitute a collective and that contextual features may influence collaboration processes as well as outcomes.

2.3.3 FWAs and virtual teams

I have now briefly reviewed the literature on FWAs and presented the key underpinnings of the literature on teams and team effectiveness. I have then presented a framework of collaboration. The next step is to explore how FWA use fits within this framework. However, before I review the literature on FWA and collaboration within teams, a particular sub-section of the teams literature deserves discussion as it carries resemblances to the topic studied here. This is virtual work done in virtual teams. Next, I will discuss the conceptualisation of

virtual teams, highlight key findings of this literature and explain the similarities and differences between FWA use in teams and virtuality in teams.

2.3.3.1 Virtual teams

Virtual teams have grown to become an established work design in the last years, with a corresponding growth in research on the topic (Hoch and Kozlowski, 2014; Gilson *et al.*, 2015). Traditionally, virtual teams have been defined as consisting of team members that work interdependently to achieve their team goal while dispersed (across distances and time zones) and relying on electronic communication methods with limited to no face-to-face contact (Bell and Kozlowski, 2002). Operationalisations of virtuality and definitions of what constitutes a virtual team vary significantly. Virtuality has, for example, been operationalised as the physical distance between team members, measured in units of time or distance (O’Leary and Cummings, 2007; Foster *et al.*, 2015). It has also been operationalised as the extent of use of electronic communication tools, the informational value they provide and the synchrony of interactions (depending on the tools used) (Kirkman and Mathieu, 2005) as well as the extent of face-to-face contact among team members (Fiol and O’Connor, 2005).

Although scholars have yet to reach consensus on how virtuality in teams should be defined and operationalised, most agree that geographic dispersion of team members and/or technology usage within the team (including their synchrony) are the two key dimensions of virtuality (Bell and Kozlowski, 2002; Gibson and Gibbs, 2006; Foster *et al.*, 2015; Dulebohn and Hoch, 2017). These two key dimensions have fuelled an ongoing conceptual debate of what constitutes the key characteristic of a virtual team. The question asked is whether a team is virtual because of its dependence on electronic communication methods or whether its dependence on electronic communication is a result of its virtuality (geographical dispersion) and, therefore, a way to deal with not being able to interact face-to-face (Schweitzer and Duxbury, 2010). Critics of conceptualising virtuality as dependence on electronic communication (and amount of face-to-face contact) have argued

that virtual teams and collocated teams may make similar use of electronic communication channels (e.g. messengers) or use face-to-face meetings to the same extent (Hinds and Mortensen, 2005). Therefore, face-to-face contact or electronic communication usage should not be considered as distinguishing characteristics of virtuality in teams (Gibson, Huang, Kirkman and Shapiro, 2014; Foster *et al.*, 2015). Critics of geographical dispersion as a definition of virtuality argue that dispersion limits the possibilities of meeting face-to-face and the lack of face-to-face contact should therefore be the defining element, rather than geographical dispersion (resulting in increased reliance on other methods of communicating) (Fiol and O'Connor, 2005). Furthermore, some scholars argue that objective distance (measured in miles or hours) does not mean the same as subjective perceptions of distance or proximity (Wilson *et al.*, 2008; Siebdrat, Hoegl and Ernst, 2014).

Early research on virtual teams frequently juxtaposed teams as either virtual or face-to-face, but recently scholars have argued for a dimensional measurement of virtuality or virtualness, where a team varies on a virtuality continuum from fully face-to-face to fully virtual (no face-to-face) (e.g. Martins, Gilson and Maynard, 2004; Kirkman and Mathieu, 2005; Dixon and Panteli, 2010; Schaubroeck and Yu, 2017). A dimensional approach can allow capturing of the various levels of virtuality in virtual teams where some teams may make extensive use of electronic communication and others less so. Similarly, in some teams some members may be collocated and others remote. Such teams are referred to as being hybrid and have been found to experience more difficulties than fully virtual teams because of the risk of an in-group/out-group distinction developing, where distributed members form groups and collocated members form groups (Staples and Webster, 2008; Webster and Wong, 2008; Cheshin *et al.*, 2013).

According to Gilson *et al.*'s (2015) review of the status of virtual team research, the literature has centred around several themes. These include leadership, effects of globalisation and geographical distribution, use of technology to communicate and development of trust. Gilson *et al.* (2015) also found that the

I-P-O model had served as a basis to much of the work on virtual teams, examining inputs (e.g. composition and leadership) and outcomes as well as various mediators and moderators. Recent reviews have summarised current evidence on virtual teams and found that virtuality has a negative effect on various mediators and outcomes, such as team conflict, knowledge sharing and innovation (Gibson and Gibbs, 2006; Mesmer-Magnus *et al.*, 2011; Ortiz de Guinea, Webster and Staples, 2012). In addition, when dealing with complex tasks, geographic dispersion has been found to have negative effects on perceived performance (Cramton and Webber, 2005).

Whether virtuality in teams should be considered an input or a moderator to the I-P-O model, depends at least in part on how virtuality is conceptualised. If a team is set up as virtual team inputs are changed because organisations can on-board individuals that they may not have been able to do had the team been collocated (Mathieu, Maynard, Rapp and Gilson, 2008). Also, virtual teams are frequently faced with differences in languages, cultures and traditions due to geographical dispersion, which creates differences between entities and a possible lack of common understanding (Bedwell *et al.*, 2012). In such cases, virtuality should also be regarded an input factor (Ortiz de Guinea, Webster and Staples, 2012). However, virtuality can also be regarded as a moderator and as influencing the entire process, especially when conceptualised as a continuum. Degree of virtuality (e.g. degree of dispersion of team members) would therefore moderate the I-P-O model in the same way as degree of interdependence and task complexity could (Marlow, Lacerenza and Salas, 2017). The extent of virtuality within a team may therefore strengthen or weaken relationships between causal factors and team effectiveness (Staples and Webster, 2008; Stark and Bierly, 2009).

2.3.3.2 Differences and similarities between virtual teams and the use of FWAs

Virtual teams share some similarities with teams that contain flexible workers, in particular teams that contain teleworkers who work occasionally or regularly away from the office. Since part-time work means working fewer hours and

does not involve a virtual dimension I will not discuss this type of FWA further in this section. However, there are similarities between teams containing teleworkers and flexitime users and virtual teams, which require clarification.

First, the line between virtual work and telework can be unclear in some cases. This is particularly the case with full-time telework, when teleworkers work a full workweek away from the office and therefore have limited to no face-to-face contact with other team members. In such cases, a similar dynamic may emerge to that observed in virtual teams, as there are no opportunities to build relationships and interact face-to-face. However, scholars have highlighted that most telework is part-time, where teleworkers combine days working from home with days working at the office and therefore have the opportunity to interact face-to-face with co-workers (Gajendran and Harrison, 2007; Taskin and Bridoux, 2010; Fogarty, Scott and Williams, 2011; Biron and Veldhoven, 2016). Furthermore, in some cases working virtually and working extreme flexible working hours may have similar consequences. This is because extreme flexible working hours may result in asynchronous interactions when some members work nights rather than days, with a similar impact to that observed in virtual teams. Having acknowledged these similarities, there are also differences between teleworking in teams and virtual teams that require clarification.

The first difference is concerned with the geographical dispersion of virtual teams. Although teleworkers may conduct their work away from the office, geographic dispersion is not an integral component to teleworking. In most empirical work, teleworkers are reported to work from home (Gajendran and Harrison, 2007). Furthermore, in the case of voluntary telework, telework is implemented in organisations that are otherwise normally collocated in order to enable individual employees to better balance their work and personal lives. Employees are therefore permitted to conduct some of their work from home, which can be assumed to be within commutable distance from the office. Teleworkers therefore retain the opportunity to come into the office and interact with colleagues face-to-face (Gajendran and Harrison, 2007). This contrasts

with geographically distributed workers in virtual teams, which are often recruited in different locations. Therefore, they work with other team members across time zones, cultures and countries with few or no opportunities to interact face-to-face and members may never have met in person (Maynard, Mathieu, Rapp and Gilson, 2012; Allen, Golden and Shockley, 2015; Gilson *et al.*, 2015).

A second difference is in the reliance on electronic communication. Virtual teams usually have no face-to-face interactions and are therefore highly reliant on electronic communication (Maynard, Mathieu, Rapp and Gilson, 2012). However, the extent to which teleworkers rely on electronic communication is dependent on their frequency of teleworking (Allen, Golden and Shockley, 2015). During teleworkers' days of absence, they may rely on electronic communication but if they do not telework a full workweek they can deal with issues face-to-face on the days of their physical presence at the office (Biron and Veldhoven, 2016). Virtual teams, by definition, are more dependent on electronic communication and therefore likely to experience higher risks associated with communicating electronically, including those surrounding asynchrony (having to wait for answers because of the communication media or because they may not be working at the same time limiting their ability to interact in real time (Martins, Gilson and Maynard, 2004; Ganesh and Gupta, 2010)).

Two additional dimensions differentiate FWA use within teams from virtual teams. First, when FWAs are voluntary, meaning that employees are given the choice to work part-time, flexible hours or telework, some employees may be granted the opportunity to work flexibly and others may not. In addition they may work flexibly to different extents (e.g. some work one day from home, others three days). Virtual teams are usually set up as completely virtual, all members are faced with the same situation and have no choice over their virtuality (Maynard, Mathieu, Rapp and Gilson, 2012). Second, virtual teams have been shown to lack shared context or mutual knowledge in the team (Cramton, 2001), as members miss the socialising that is available to collocated

members, such as having lunch together (Nardi and Whittaker, 2002). Telework, part-time work and flexible working hours may all reduce socialising opportunities because of flexible workers' reduced presence but, depending on frequencies of use, there are still opportunities for these employees to socialise with their team members and build mutual knowledge.

In summary, virtual teams are usually defined as teams that rely on electronic communication and/or are geographically dispersed. Scholars have not reached a consensus on how virtuality in teams should be defined and studies vary in terms of whether they consider virtuality an input or a moderator/mediator to team effectiveness. However, neither one of the key dimensions necessarily applies to FWA use, except in extreme cases. Having discussed the differences and similarities between virtual teams and FWA use within teams, I will now turn to describing the methodology and findings of a literature review which was conducted to explore the status of knowledge on the impact of FWA use on collaboration within teams.

2.4 The impact of FWAs on collaboration within teams – a review

To develop an understanding of the findings of current research on the impact of FWA use on collaboration I reviewed the current evidence base. I outlined key constructs, created search strings, identified papers to be included or excluded based on inclusion criteria and then analysed these papers. In this section I present key constructs, methods, analysis and the findings of the review.

2.4.1 Key constructs and search strings

The review was guided by the primary review question “How does FWA use (defined as teleworking, flexible working hours (flexitime) and part-time work) impact on collaboration within teams?”

Drawing from the discussion of the previous section on the similarities and differences between FWAs and virtual teams (2.3.3), the review was focused on

FWAs only, in particular telework, part-time work and flexitime or flexible working hours.

Collaboration was conceptualised more broadly. First, numerous scholars have pointed out that dyads are the building blocks of teams since most interactions take place between two individuals, one-to-one (Liden, Anand and Vidyarathi, 2016). Some individual members may need to collaborate more than other members and some members may be more knowledgeable than others, which reflects compositional differences at the individual level and highlights that dyadic relationships within teams may change team functioning (Mathieu, Maynard, Rapp and Gilson, 2008). Knowledge is ultimately stored within individuals and shared by individuals with other individuals or a group of individuals (Staples and Webster, 2008). Therefore most of what happens in organisations happens in one-to-one interactions (Liden, Anand and Vidyarathi, 2016). Acknowledging that interactions and joint activities between two or more individuals are the building blocks of collaboration within teams the searches were not only focused on teams but also on the dyadic relationships within them. Second, collaboration between entities includes both collaborative behaviours as well as emergent states, which are underpinned by relationships, values, affects, cognitions and motivations of team members (Marks, Mathieu and Zaccaro, 2001; Bedwell *et al.*, 2012; Salazar and Salas, 2013). Therefore, in order to capture various experiences, attitudes and behaviours that underpin and explain how collaboration is affected by FWA use, the searches did not only focus on collaboration or collaborative behaviours – but also incorporated broader search terms such as co-workers, co-worker relationships, workgroups and teams.

Based on these key constructs I created search strings that interrogated the existing literature on (1) flexible workers and relationships with other members within their teams, (2) flexible workers and effects on teams in order to access studies conducted at the team-level, and (3) flexible workers and the effects on collaboration with others.

2.4.2 Search process, inclusion criteria and analysis

I searched three data sources: ABI/Inform Global, EBSCO Business Source Complete and PsycINFO. I also identified additional relevant literature by cross-referencing papers deemed as highly relevant to the review question. In order to draw boundaries for this review, I focused exclusively on empirical and conceptual work published in peer-reviewed journals from the field of business and management. Therefore I excluded magazine articles and industry reports, since these are often of an anecdotal nature or rely upon secondary data, making the validity of the findings hard to assess. I focused my searches on the years 1990-2017, due to the technological developments that have occurred since 1990, for example the growth of the Internet and widespread access to it. I also included only papers published in journals with a journal ranking from the Association of Business Schools (ABS) of 2 or higher, in order to increase the likelihood that the findings reported have validity. Furthermore, in order to be included, papers had to: (1) focus on the *use* of telework, flexible working hours or professional part-time work (as defined in section 1.3.1) by individual employees, excluding papers that examine other types of flexible working or other measures of it (e.g. availability or perceived availability); (2) focus on *voluntary* use, therefore excluding papers where FWAs are imposed or mandatory (see 1.3.1); (3) focus on individual FWA use only, excluding papers on geographically distributed virtual teams since members in such teams have no choice over their virtual situation and have little to no opportunities to interact face-to-face (see 2.3.3); (4) examine the impact of individual FWA use on the social environment and not vice versa, thereby excluding papers that look at the impact of the environment on flexible workers' individual outcomes (e.g. those that explore the effects that supervisor and co-worker support has on flexible workers' attitudes and behaviours); (5) focus on knowledge workers, defined as employees whose jobs involve interpretation, application, creation, manipulation and communication of analytical and theoretical knowledge, often acquired through education (Janz, Colquitt and Noe, 1997; Bélanger and Allport, 2008) as knowledge workers are more likely to have some autonomy and control over their work, excluding papers with other samples such as production, call centre

or service workers (e.g. McAlpine, 2015). I also excluded self-employed workers since they mostly work alone and do not need to collaborate with others. The search process yielded a total of 67 papers which form the basis of the synthesis presented in this chapter.

Studies were reviewed according to the focus of the study, methodology adopted, conceptualisation and frequency of use, samples and key findings. In a comparative analysis process, themes started to emerge after having read approximately half of the articles. I looked for similar patterns when reading through the rest of the articles while also seeking explanations when similar patterns could not be identified. Claims made in studies were therefore critically analysed and underlying elements that may explain claims made were recognised (Hart, 1998). This procedure allowed me to sort diverse ideas in the extant literature and allowed themes to emerge.

2.4.3 Observations of the research stream

The review process revealed three particularly interesting insights. First, no papers had directly explored the impact of FWA use on collaboration within teams. Therefore, the impact on collaboration had to be inferred from studies which had focused on other implications of FWAs, such as on co-worker relationships, attitudes and behaviours of flexible workers and their co-workers. In addition, only a few studies explicitly looked at teams (e.g. Bosch-Sijtsema *et al.*, 2011) and in most cases the level of interdependence between employees was unclear – suggesting that studies may be conducted within work units rather than actual interdependent teams or groups. In light of this observation, I will refer to work units rather than teams throughout this chapter, unless when discussing the few studies conducted within teams. I will also further discuss the issue of interdependence in section 2.4.7.3.

Second, a majority of the studies were focused on telework (54 papers), while the impact of part-time work and flexible working hours have received much less research attention (12 and 1 paper, respectively). As a result, most of the discussion in the following section will be focused on the impact of telework, although similarities and differences are drawn out when appropriate. For clarity

when reporting the evidence, I will refer specifically to each practice, telework, part-time work and flexible working hours. When I refer to flexible workers I am referring to all three.

Third, the majority of academic work on the topic to date relies on the views of flexible workers (Bailey and Kurland, 2002). Other organisational members, such as co-workers who do not work flexibly are more rarely sampled although their experiences may differ from those of flexible workers (for exceptions see: Golden (2007) and Fogarty, Scott and Williams (2011)). When this is the case they are frequently a comparison or control group (see Table 2-1 for details). Some of the exploratory studies provide an exception to this rule by adopting a methodology that allows for a broader exploration (e.g. case studies following the implementation of telework programmes in an organisation), in which some studies explore the experiences of co-workers and supervisors in addition to teleworkers themselves (e.g. Brocklehurst, 2001). In the following sections I will discuss the experiences of flexible workers and their co-workers in separate sections, as reported in the evidence. This allows me to draw out variations in how the practice is experienced depending on whether the employee works flexibly or not. I will refer to teleworkers, part-time workers and flexitime users when appropriate and use the term co-workers for their co-workers. These are in most cases non-flexibly working co-workers, although studies are not always clear on their FWA use (an issue I return to in section 2.5). From here on I will collectively refer to them as co-workers.

In the following sections I will present the findings of the review, in which I identified an impact on various aspects that underpin collaboration within teams or work units. I will first discuss the impact of teleworking on co-workers and work units, as experienced by teleworkers. I will then discuss the experiences of those who do not telework, as these may differ from those of teleworkers, who may reap personal benefits from their arrangement while their colleagues do not. Subsequently, I will review the impact of part-time work and flexitime use on co-workers and work units, as reported by part-time workers and standard workers (those that work full-time). Finally, I discuss two themes that emerged

through analysis, namely frequency of use and the impact of context, in particular the organisational culture, supervisors and the work-related context. For full overview of the studies reviewed and their key characteristics (such as methodology, sample, frequency of FWA use, organisational context) see Appendix A.

2.4.4 Impact of teleworking on co-workers and work units

Current research on the impact of telework on co-workers mostly reports how teleworkers perceive the reaction of their co-workers. Studies that sample co-workers mostly do so for comparison purposes rather than to understand their experiences (see Table 2-1 for the focus of studies sampling co-workers). In the following sections the impact of teleworking on co-workers, co-worker relationships and work units in general, as experienced by teleworkers and co-workers, will be discussed.

Table 2-1 Studies including samples of co-workers

Study focus	Authors
<i>The general experience of FWA programmes</i>	(Brocklehurst, 2001; Taskin and Edwards, 2007; McDonald, Bradley and Brown, 2009; Wilton, Páez and Scott, 2011)
<i>A comparison of outcomes and attitudes of flexible workers and co-workers</i>	(Watson-Fritz, Narisimhan and Hyeun-Suk, 1998; Duxbury and Neufeld, 1999; Watson-Manheim, Piramuthu and Narasimhan, 2000; Kurland and Cooper, 2002; Mann and Holdsworth, 2003; Markey, Kowalczyk and Pomfret, 2003; Illegems and Verbeke, 2004; Collins, 2005; Lautsch, Kossek and Eaton, 2009; Morganson <i>et al.</i> , 2010; Collins, Hislop and Cartwright, 2016; Windeler, Chudoba and Sundrup, 2017)
<i>Co-workers' experience of working with flexible workers</i>	(Lee, MacDermid and Buck, 2000; Cooper and Kurland, 2002; Lee, Macdermid, Williams and Buck, 2002; Broschak and Davis-Blake, 2006; Hylmö, 2006; Golden, 2007; Litrico and Lee, 2008; Dick, 2009; ten Brummelhuis, Haar and van der Lippe, 2010; Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011; Fogarty, Scott and Williams, 2011; Nentwich and Hoyer, 2013; Teasdale, 2013)

2.4.4.1 Experiences of teleworkers

A first theme identified in this group of studies focuses on identification and legitimacy of teleworkers within their work units. Teleworkers generally perceive social interactions and organisational connectedness as important and valuable (Raghuram, Garud, Wiesenfeld and Gupta, 2001; Raghuram and Wiesenfeld,

2004; Neufeld and Fang, 2005). Yet, teleworkers have reported a negative effect of teleworking on the quality of co-worker relationships (Golden, 2006; Gajendran and Harrison, 2007). This may be a result of a reduction in social interactions, weakening of ties and because teleworkers feel less part of the team (Felstead, Jewson and Walters, 2003; Halford, 2005). Telework has also been argued to disrupt the psychological and social processes that underpin employee identification, identity enactment and verification in the workplace (Thatcher and Zhu, 2006). As such, teleworkers have been reported to struggle with forging a new identity in the absence of workplace artefacts, routines, rituals and social banter (Brocklehurst, 2001) and run the risk of missing out and not receiving information, which can help in the completion of their tasks (Cooper and Kurland, 2002). Similarly, their legitimacy as contributing, productive and participating members of their organisation has been found to be questioned, resulting in teleworkers worrying about their position in the team (e.g. Brocklehurst, 2001; Hylmö, 2006; Sewell and Taskin, 2015). While some studies have found teleworkers to find telework a welcome escape from the social environment at work (Lal and Dwivedi, 2009; Tietze and Nadin, 2011; Collins, Hislop and Cartwright, 2016), numerous studies have found teleworkers to experience isolation from the rest of the employees (Mann, Varey and Button, 2000; Mann and Holdsworth, 2003; Golden, Veiga and Dino, 2008; Morganson *et al.*, 2010). This has been found to translate into loneliness, insecurity, stress and anxiety, as they cannot easily see, consult or compare themselves with co-workers and may miss the social contact (Mann, Varey and Button, 2000; Mann and Holdsworth, 2003; Wilton, Páez and Scott, 2011; Bentley *et al.*, 2016). Kurland and Cooper (2002) found that teleworkers were more likely to feel isolated when they teleworked frequently, had teleworked for a long time and/or had only been with the organisation for a short time (Cooper and Kurland, 2002). Teleworkers have also reported to form connections with other teleworkers for collegiality and support, rather than co-workers, possibly because they identify more with them because they are in a similar situation (Felstead, Jewson and Walters, 2003; Tietze and Nadin, 2011; Collins, Hislop and Cartwright, 2016). In other cases, teleworkers may rely upon social support

from contacts and friendships they made before they started teleworking (Collins, Hislop and Cartwright, 2016). Furthermore, relationships have been found to more easily adjust to reduced facetime when they are characterised by trust (Golden and Raghuram, 2010) or when employees had established personal relationships (Dimitrova, 2003; Coenen and Kok, 2014). This suggests that a teleworker may need regular opportunities to connect with co-workers face-to-face, in order to minimise the risk of experiencing isolation (Kurland and Cooper, 2002; Bentley *et al.*, 2016), especially at the start of employment or of a project (Coenen and Kok, 2014). However, over time they may become accustomed to working away from the office and adapt to the changed circumstances (Halford, 2005; Coenen and Kok, 2014).

A second theme identified focuses on teleworkers' strategies to overcome difficulties that arise from their work arrangement in their work unit. Some scholars have criticised extant research as depicting teleworkers as "passive bystanders" (Lal and Dwivedi, 2009; p.269), when in reality they have been shown to adopt various strategies and behaviours to mitigate the penalties their work arrangement imposes on co-workers and themselves. Such strategies are often aimed at increased visibility (being observed at work by supervisors and others) and increased presence (enabling participation in social interactions with co-workers and others) (Felstead, Jewson and Walters, 2003). Reflecting this, I found that the main strategy teleworkers seem to adopt is to increase their physical presence in the office – their facetime (Brocklehurst, 2001; Kurland and Cooper, 2002; Thatcher and Zhu, 2006; Van Dyne, Kossek and Lobel, 2007; Vayre and Pignault, 2014). From a presence point of view, this provides teleworkers with opportunities to interact, share ideas or deal with problems face-to-face and reflects a belief that electronic communication methods cannot be a substitute for interacting face-to-face (Watson-Manheim, Piramuthu and Narasimhan, 2000; Pyöriä, 2003; Halford, 2005; Golden, Veiga and Dino, 2008; Lal and Dwivedi, 2009; Richardson and McKenna, 2014; Vayre and Pignault, 2014). From a visibility standpoint, increasing facetime demonstrates teleworkers' commitment, engagement and contribution in the absence of physical presence (Halford, 2005), through impression management

tactics such as demonstrating proactive availability and strategic self presentation (Thatcher and Zhu, 2006; Van Dyne, Kossek and Lobel, 2007). These studies implicitly highlight the importance of passive facetime (Elsbach, Cable and Sherman, 2010), where employees' presence can be observed by others without them necessarily interacting with others at all. Richardson and McKenna (2014) found that teleworkers pay more attention to developing and maintaining relationships with their co-workers than before they started teleworking, especially when they had career or promotion ambitions. They reported it essential to stay visible to others through organising patterns of interaction when present at the office (Richardson and McKenna, 2014). From a more practical standpoint, as teleworkers often miss out on casual conversations and opportunities to collaborate, they need to rely on formalised opportunities to interact, such as formal meetings, to foster knowledge and information exchange (Duxbury and Neufeld, 1999; Golden, 2007; Golden and Raghuram, 2010; Vayre and Pignault, 2014; Sewell and Taskin, 2015). Their facetime at the office is therefore largely focused on work-related matters with little time for sociability (Felstead, Jewson and Walters, 2003; Halford, 2005; Sewell and Taskin, 2015). Halford (2005) labelled this concentrated work, which involves intense, work-related interactions with co-workers and supervisors, and interacting with as many as they can on the days they come into the office (Wilton, Páez and Scott, 2011). Other studies emphasise that teleworkers' presence at the office should be focused on enabling teleworkers to socialise and connect with co-workers informally (Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011; Wilton, Páez and Scott, 2011; Richardson and McKenna, 2014). This is reported to reduce the sense of isolation experienced and allow teleworkers to cultivate personal relationships (Cooper and Kurland, 2002; Vayre and Pignault, 2014).

A third theme focuses on the use of technology among teleworkers, how they adapt to the opportunities technology offers them and use them to their benefit when face-to-face interactions are not possible. The availability of information systems and communication technology enable teleworkers to communicate and exchange knowledge with co-workers (Duxbury and Neufeld, 1999;

Bélanger, Webb Collins and Cheney, 2001; Halford, 2005; Lee, Shin and Higa, 2007; Bélanger and Allport, 2008). Studies have highlighted the importance of having the relevant technology in place to enable employees to communicate with each other (Baruch, 2000; Coenen and Kok, 2014) as well as a sufficient level of technology support (Watson-Fritz, Narisimhan and Hyeun-Suk, 1998; Golden and Raghuram, 2010). The lack of such technology may hinder the transfer of knowledge and information (Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011). Yet, reliance on electronic communication has also been reported to result in various challenges, such as misinterpretations (Wilton, Páez and Scott, 2011). In addition, individuals may need to proceed with tasks without the advice of others, risking suboptimal outcomes by not being able to obtain answers to urgent questions because of perceived unavailability or delayed response times (Cooper and Kurland, 2002; Golden and Raghuram, 2010). Perhaps echoing these reported concerns and the need to stay visible, several studies report that teleworkers use technology to engage in display behaviours to enhance their visibility and availability, by being electronically present and available (Halford, 2005; Taskin and Edwards, 2007; Lal and Dwivedi, 2009; Wilton, Páez and Scott, 2011; Sewell and Taskin, 2015). They have been reported to carry their phones at all times, send emails at irregular times (Mann, Varey and Button, 2000; Felstead, Jewson and Walters, 2003) and experience being “shackled to their workstations at home” (Sewell and Taskin 2015, p.1519). Teleworkers have also been found to adapt to the use of different media channels, for example, by using them concurrently (Bélanger and Watson-Manheim, 2006). In addition, in some cases, habit, comfort and ease of use may explain teleworkers’ willingness to adapt to electronic communication (Lee, Shin and Higa, 2007; Bélanger and Allport, 2008).

In summary, three themes emerged from studies reporting the experience of teleworkers. The first one focuses on teleworkers’ identification and legitimacy struggles and the impact on co-worker relationships. The second focuses on the strategies teleworkers adopt to overcome such issues, which is mainly

increasing their facetime at the office. A third theme focuses on how teleworkers use electronic methods.

2.4.4.2 Experiences of co-workers

With the considerable amount of evidence on teleworkers and their strategies to establish or maintain their position in their workgroups, the limited work exploring the experience of co-workers is noteworthy (see Table 2-1 for overview). However, I identified two themes in the literature amongst the studies that have.

A first theme describes the reactions of co-workers to working with teleworkers. Most studies report negative reactions, generally as experienced by teleworkers, including scrutiny and suspicion (Kurland and Cooper, 2002; Halford, 2005; Taskin and Edwards, 2007; Sewell and Taskin, 2015), resentment (Collins, 2005; Lautsch, Kossek and Eaton, 2009; Tietze and Nadin, 2011; Wilton, Páez and Scott, 2011) and frustration and envy (Duxbury and Neufeld, 1999; Baruch, 2000; Felstead, Jewson and Walters, 2003). The same reactions have been reported by co-workers themselves (Illegems and Verbeke, 2004; Fogarty, Scott and Williams, 2011; Teasdale, 2013). Adverse reactions may reflect the fact that it is easier to approach someone who is physically present in the office, as office-based workers may not know whether the teleworker is working at a given moment or may not wish to distract or disturb them (Duxbury and Neufeld, 1999; Fogarty, Scott and Williams, 2011). They may also reflect inequity perceptions in the absence of formal procedures, resulting in some employees being allowed to telework and others not (Fogarty, Scott and Williams, 2011) and that work is experienced as being transferred from teleworkers to workers in the office (Lautsch, Kossek and Eaton, 2009). Such behaviours may gradually lead to a development of a 'them and us' mentality (e.g. Tietze and Nadin, 2011; Wilton, Páez and Scott, 2011). Collins, Hislop and Cartwright, (2016) found that the longer an individual teleworks, the more likely it is that such bifurcations will develop and the greater the risk of a distance developing between teleworkers and co-workers.

A second theme describes ways to mitigate such adverse reactions. Some studies suggest that increased formalisation and predictability, such as teleworking on set days of the week, can minimise the adverse impact on co-workers (ten Brummelhuis, Haar and van der Lippe, 2010; Fogarty, Scott and Williams, 2011). In such cases, ambiguity is reduced as co-workers are able to predict when and where to find teleworkers to consult with them (Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011). This is similar to what Sewell and Taskin (2015) referred to as re-regulation, which included fixing the days on which telework was to be performed in advance and fixing their hours of availability. Others have found higher frequencies of telework to have negative effects on co-workers but higher levels of teleworkers and co-workers working face-to-face at the office to alleviate this impact (Golden, 2007). This suggests that if a teleworker increases his or her presence at the office, relations with co-workers may improve. It also suggests that teleworkers should not all be absent on the same day, to ensure sufficient employees are present in the office at a given moment to deal with issues that may arise (Fogarty, Scott and Williams, 2011). Negative implications on co-workers may be mitigated by combining some form of regularisation of working patterns with equitable and transparent procedures where all employees have the opportunity to make arrangements to meet their needs (Lautsch, Kossek and Eaton, 2009; Fogarty, Scott and Williams, 2011). If all employees have the opportunity to negotiate a level of flexibility suitable for them personally, the level of flexibility of co-workers may not be viewed as unfair and negative consequences may be minimised (Collins, Cartwright and Hislop, 2013).

In summary, two themes emerged from the literature reporting co-workers' experiences. The first theme centred on co-worker reactions. The second discussed ways to minimise such reactions such as formalisation, transparency and limiting frequency of use.

2.4.5 Impact of flexible working hours and part-time work on co-workers and work units

Flexible working hours have been suggested to be challenging for co-workers because of irregularity of working hours (ten Brummelhuis, Haar and van der Lippe, 2010). Interestingly, ten Brummelhuis, Haar and van der Lippe (2010) found that teleworking had no impact on teleworkers' and co-workers' collegiality, but flexible working hours had a negative effect on collegial behaviours. They propose that collegial behaviours are largely determined by opportunities to interact and flexible working hours may limit those opportunities, since employees may not be working at the same time. Such flexibility can result in unpredictability of when an individual is working and when not, which presents challenges when co-workers need to collaborate (Fogarty, Scott and Williams, 2011). Formality, regularity and clarity in communication of presence and absence may be more important than the amount of presence *per se* (ten Brummelhuis, Haar and van der Lippe, 2010; Fogarty, Scott and Williams, 2011; Coenen and Kok, 2014).

Studies on part-time work reporting the experience of co-workers have found co-workers to express reservations because they experience that part-timers' work overflows onto their desks (Lee, Macdermid, Williams and Buck, 2002; Dick, 2009), because they cannot get hold of them (Lirio *et al.*, 2008) and overall their work arrangement is found to cause inconvenience and disruption to the workflow (Broschak and Davis-Blake, 2006; McDonald, Bradley and Brown, 2009). Frustrations have been reported to arise because part-time workers are experienced to be inconsiderate and slow things down, for example by limiting their working hours at critical moments when everyone else has to put in additional time (Lee, Macdermid, Williams and Buck, 2002; McDonald, Bradley and Brown, 2009). This has been reported to result in jokes and innuendo about their absence on certain days of the week (McDonald, Bradley and Brown, 2009). Other studies have suggested that the proportion of part-time workers within a unit play a role in the effect of the practice (Markey, Kowalczyk and Pomfret, 2003; Broschak and Davis-Blake, 2006).

Studies reporting the experience of part-time workers themselves have found part-time workers to work extra hard, skip breaks, attempt to manage a full-time workload, be highly conscientious and show high performance and commitment (e.g. Dick, 2009; Dick and Hyde, 2006). They therefore seek to accommodate to the full-time norm of their co-workers and minimise the impact of their arrangement. Friede *et al.* (2008) argued for the importance of the team of the part-time worker being open to the practice and that effective, open and frequent communication processes are established between all stakeholders, for example regarding hours of presence and absence. Furthermore, the more part-time workers are able to interact informally with their co-workers, the more organisations become cohesive, and social relations and work-related helping behaviours improve (Broschak and Davis-Blake, 2006). Lawrence and Corwin (2003) highlighted the importance of attending interaction rituals as these affirm part-time workers' membership status and commitment. These included scheduled meetings, which were scheduled on the days part-time workers were present (Lawrence and Corwin, 2003; Lirio *et al.*, 2008). In addition, part-time workers have been found to deploy various strategies to make the arrangement work such as adjusting their personal life to work when necessary, taking ownership to make sure their arrangement would not have consequences for others and doing concentrated work while at the office, yet ensuring priorities are met, tasks are delegated and that communication is transparent (Lee, Macdermid, Williams and Buck, 2002).

Moreover, a significant amount of empirical work on part-time work is focused on the marginalisation of part-time workers and their inclusion in the organisation (Lirio *et al.*, 2008). Although part-time workers and full-time workers may carry out similar tasks, part-timers have been reported to be blocked from roles deemed unsuitable and devalued as team members (McDonald, Bradley and Brown, 2009). The issue of marginalisation also draws attention to the role of the organisational context and the broader sociocultural discourses in which part-timers are situated (Dick and Hyde, 2006). This includes ideal worker norms which emphasise full-time presence and visibility in the office, in which part-timers are perceived to perform worse than other

employees (Nentwich and Hoyer, 2013). Lirio *et al.* (2008) reported the importance of supervisory behaviours such as trust, management at a distance, protecting and advocating for the employee and adapting norms and operations at the office to the part-time worker. In their study, this meant asking part-time workers to be accessible on their day off, willing to come in to a meeting if necessary and creating predictable work schedules (Lirio *et al.*, 2008). They also highlighted the importance of favourable supervisor dispositions towards part-time work in the success of the arrangements, including empathy towards part-time workers and belief in the sustainability of part-time work, work-life initiatives, workplace diversity and inclusiveness (Lirio *et al.*, 2008).

In summary, studies on the implications of flexible working hours suggest irregularities in working hours can result in negative reactions from co-workers. Studies on part-time work suggest that co-workers find that part-time work disrupts the workflow in the organisation and that part-time workers put in additional efforts, yet risk experiencing marginalisation.

2.4.6 The role of frequency of FWA use

Recent research on telework has begun to acknowledge the importance of taking teleworking frequency into account when evaluating outcomes from it (e.g. Allen *et al.*, 2015). Scholars argue that how frequently an employee is absent from the office plays an important role in the psychological and social effects from teleworking, since more time spent teleworking means less time to interact, socialise and develop relationships and share knowledge with co-workers and supervisors face-to-face (e.g. Golden, Veiga and Dino, 2008; Taskin and Bridoux, 2010).

My review revealed that many studies were conducted on high-frequency telework, i.e. full-time or almost full-time (see Appendix A for details) (Mann, Varey and Button, 2000; Brocklehurst, 2001; Felstead, Jewson and Walters, 2003; Mann and Holdsworth, 2003; Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011; Collins, Cartwright and Hislop, 2013). High frequency telework has been shown to have more detrimental effects on co-worker relationships than lower frequency telework (Golden, 2006, 2007; Gajendran

and Harrison, 2007). The more extreme reduction in facetime at higher frequencies results in the undermining of the ties between co-workers (Gajendran and Harrison, 2007; Taskin and Bridoux, 2010) and a reduction in camaraderie at the office (Brocklehurst, 2001). At higher frequencies, teleworkers and co-workers may not know each other very well, risking increased individualisation, exclusion and disconnect between the two groups and deterioration of relationship quality (Duxbury and Neufeld, 1999; Golden, 2006, 2007; Collins, Hislop and Cartwright, 2016). High frequency telework also results in similar dynamics to those in virtual teams, with little to no face-to-face interactions. It is therefore not surprising that high frequency teleworkers have been reported to derive benefit from clear criteria and organisational connectedness, since they have fewer opportunities to interact with colleagues at the office (Raghuram and Wiesenfeld, 2004).

Some studies have suggested that limiting the frequency of use e.g. to two days a week (Donnelly, 2006) has the potential to allow teleworkers sufficient opportunity to communicate and collaborate (Duxbury and Neufeld, 1999; Baruch, 2000; Donnelly, 2006; Wilton, Páez and Scott, 2011). Such a balance between teleworking and working at the office has been advocated by several scholars (Baruch, 2000; Cooper and Kurland, 2002; Mann and Holdsworth, 2003), for example to promote continuity and mentoring (Windeler, Chudoba and Sundrup, 2017), knowledge transfer (Taskin and Bridoux, 2010; Coenen and Kok, 2014; Windeler, Chudoba and Sundrup, 2017) and minimise the need for additional education, support and surveillance (Pyöriä, 2003). By limiting the frequency of teleworking, employees are more likely to maintain their identity and involvement with the organisation as well as their relationships with others (Cooper and Kurland, 2002; Thatcher and Zhu, 2006), yet they benefit from a mini-break from interactions to work on concentration-intensive tasks (Windeler, Chudoba and Sundrup, 2017). However, this may also result in a pent-up demand for interaction, especially when the teleworker is more experienced or knowledgeable and needs to mentor junior members (Windeler, Chudoba and Sundrup, 2017). This suggests interactions may not necessarily happen on the days employees telework but rather be put on hold until teleworkers are back in

the office. However, reducing frequency may not be enough to limit negative effects on co-workers. While Halford (2005) suggested that low-frequency teleworkers were able to maintain good relationships with co-workers as they were able to visit the office and interact regularly, Vayre and Pignault (2014) found that the sense of disconnection would affect all teleworkers, regardless of the frequency at which they teleworked. Therefore, factors other than frequency alone may influence the relational processes of teleworkers (Vayre and Pignault, 2014) and the appropriate frequency needs to be considered in light of organisational, individual and task-related needs and characteristics (Taskin and Bridoux, 2010).

When it comes to the frequency or amount of part-time work, what constitutes a part-time worker should be considered socially constructed in each work context, as defining professional work in terms of the number of hours worked may be difficult (Lawrence and Corwin, 2003). Often professionals work long hours and therefore anything less than such long hours may be considered part-time work although it may be close to what others would consider full-time. Nevertheless, frequency of part-time work is likely to play an important role in a similar way to that of telework. Some studies have assessed the proportion of part-time workers within a work unit and found higher proportions of part-time workers to damage relationships between workers and their supervisors, and reduce helping behaviours (Broschak and Davis-Blake, 2006). However, research to date has not addressed the frequency of part-time work in relation to the impact on co-workers or work units, although part-time workers who are absent for three days a week are likely to have much less time to interact with co-workers than those absent for one day a week. The same can be said for flexibility in working hours, as per definition; when taken to the extreme, flexible working hours could involve working nights instead of days, resulting in minimal opportunities of interaction with others. I found no studies that addressed the implications of different patterns of flexible working hours on co-workers, workgroups or work units.

In summary, current research is largely focused on high-frequency teleworkers, although lower frequency telework is often suggested as a better approach. However, current research has not recognised the impact of different amounts and patterns of part-time work and flexible working hours.

2.4.7 The role of contextual features

An interesting observation of extant research is that even at lower frequencies of use teleworkers may still feel isolated and relationships may suffer (Taskin and Bridoux, 2010). Such observations may reflect the impact of contextual features such as the organisational context, supervisors and the work-related context in which flexible workers are situated.

2.4.7.1 Organisational context

My analysis of studies focusing on telework revealed that they seem to largely reflect contexts in which telework has not been fully embraced as a normal way of working. Numerous scholars have reported that in organisations where telework is considered a privilege, or where opportunities are granted only to certain employees, feelings of resentment or frustration are more likely to arise since employees do not perceive equitable treatment (Taskin and Edwards, 2007; Lautsch, Kossek and Eaton, 2009; Wilton, Páez and Scott, 2011; Teasdale, 2013). Such contexts also give rise to feelings of isolation and exclusion as teleworkers may not be informed of what is happening in the office and may miss opportunities to connect with colleagues (Donnelly, 2006; Taskin and Edwards, 2007; Lautsch, Kossek and Eaton, 2009; Tietze and Nadin, 2011; Teasdale, 2013; Sewell and Taskin, 2015). Furthermore, when telework is not perceived as socially legitimate, teleworkers may experience increased social control from their co-workers, requiring them to signal their presence, for example, electronically (Taskin and Edwards, 2007; Sewell and Taskin, 2015). They may also feel a need to seek validation and justification for their work arrangement through interactions with co-workers (Wilton, Páez and Scott, 2011). In addition, cultural norms in organisations, such as rewarding long hours (Perlow, 1998) or valuing informal interactions (Cooper and Kurland, 2002) also play an important role. Scholars have highlighted that understanding

the organisational cultural norms is one of the critical factors in determining how employees respond to telework and the impact the practice has on interactions (Baruch, 2000; Lal and Dwivedi, 2009). Kurland and Cooper (2002) suggested that issues arising (e.g. miscommunications and misperceptions) may reflect a lack of education and training about teleworking for teleworkers, co-workers and supervisors. Others (e.g. Teasdale, 2013) suggest that even where formal teleworking programmes have been implemented, there has not been sufficient change to organisational culture, structures and practices. Teleworkers may therefore struggle as they lack social legitimacy and do not fit the 'ideal worker' norm, which often involves expectations of long hours, visibility and presenteeism (Taskin and Edwards, 2007; Teasdale, 2013; Sewell and Taskin, 2015). Because teleworkers do not conform to such a norm, they may experience guilt and need to prove their commitment both to supervisors and co-workers (Teasdale, 2013).

Studies on part-time work have paid considerable attention to the marginalisation of part-time workers and the important role of the organisation in determining the success or failure of part-time work arrangements (e.g. Nentwich and Hoyer, 2013). As such, the marginalisation or acceptance of part-timers has been reported to depend on the characteristics of the organisational context, such as whether full-time work is the norm (McDonald, Bradley and Brown, 2009) and whether commitment is equated with presenteeism (i.e. being present at one's desk) (Perlow, 1998; Dick and Hyde, 2006). Although a conscientious part-time worker may do a better job than a lazy full-time employee, working part-time is still highly visible and perceived to violate the norm (Dick, 2009). Part-time workers may also struggle more to fit in when team boundaries are strong, and there are pressures for conformity and high levels of stratification (Lawrence and Corwin, 2003).

Most of the studies reviewed can be divided into two groups depending on how they propose that issues that arise from lack of acceptance of telework and marginalisation of part-time workers can be addressed. The first group consists of studies that emphasise making the arrangement formal through supportive

and inclusive policies and formal guidelines, in order to make it more socially acceptable and seen as legitimate, which may minimise fairness and justice issues (Taskin and Bridoux, 2010; Fogarty, Scott and Williams, 2011; Wilton, Páez and Scott, 2011; Gajendran, Harrison and Delaney-Klinger, 2015). The acceptance or normalisation of teleworking may also occur when a significant number of the employees choose to telework (Baruch, 2000; Wilton, Páez and Scott, 2011; Gajendran, Harrison and Delaney-Klinger, 2015). The second group emphasises that a more deep-rooted culture change is needed in order to deal with the possible isolation of teleworkers because they do not adhere to the ideal worker norm (Perlow, 1998; Teasdale, 2013; Richardson and McKenna, 2014). This requires establishing shared norms and values of flexibility, by which expectations of team members are aligned, work contributions are equitably redefined through mutual agreements and supervisors focus on managing results, rather than monitoring work processes (Pyöriä, 2003; Van Dyne, Kossek and Lobel, 2007). This involves actively seeking to define new ways of organising work, career paths and reward structures, which provides the potential to create a culture which values results rather than facetime (Lee, MacDermid and Buck, 2000; Lee, Macdermid, Williams and Buck, 2002; Lirio *et al.*, 2008).

However, Litrico and Lee (2008) highlighted the complexities of organisational reactions, which they defined as exploration, when an organisation explores new opportunities (Lee, MacDermid and Buck (2000) denoted this as transformation) and exploitation, when it sticks to establishes routines and arrangements (Lee, MacDermid and Buck (2000) denoted this as accommodation). They found that, within one organisation, some workgroups may adopt exploration and others exploitation. Furthermore, within the workgroups themselves, part-time workers may be “exploring” while workgroup members “exploited”, meaning that they did not change any routines to accommodate the part-timer. In other groups, a more fluid adjustment would happen in which part-time workers and group members recognised the need to be flexible for the arrangement to work – in some cases with limited structure accompanying it and in other cases with a good amount of planning and

structure placing some limits on flexibility. They found that it was in such cases of balance between exploitation (routines, organisation, clear limits and schedules) and exploration (fluctuating workloads, flexible schedules) that arrangements were found to be sustainable (Litrico and Lee, 2008). Lawrence and Corwin (2003) argued that the acceptance or marginalisation of part-time professionals depended on their participation in interaction rituals – social gatherings for professional or social reasons, including meetings, coffee breaks, conference calls and drinks after work. They argued that such gatherings carry symbolic significance to the team and missing them would risk significant effects on relationships between the part-timers and members of their team as they may miss opportunities to build relationships or alliances (Lawrence and Corwin, 2003). When participation in key rituals means remaining accessible when off (e.g. for phone calls, e-mails) and attend meetings in the office, part-timers adopt a strategy of compliance, which is consistent with Lee, MacDermid and Buck's (2000) accommodation paradigm (Lawrence and Corwin, 2003).

In summary, extant research largely reflects organisational contexts in which telework and part-time work is not embraced as a normal way of working, which gives rise to social legitimacy problems, marginalisation and frustrations. However, there is a growing awareness of the role of context and the need to educate about the arrangement, offer it to all employees and establish shared norms of flexibility. Supervisors play an important role in this process. I will discuss this role next.

2.4.7.2 The role of supervisors

Although not the focus of the review, I found that many studies discussed the important role of supervisors in the impact of FWA use on co-workers and work units.

Several of the studies reviewed report on the difficulties of supervisors to trust their employees when they telework because they see them less frequently at the office (Felstead, Jewson and Walters, 2003; Halford, 2005; Richardson and McKenna, 2014). The reduced presence gives rise to concerns that teleworkers may be slacking when not physically present (Felstead, Jewson and Walters,

2003; Collins, Cartwright and Hislop, 2013). Such concerns may also explain supervisors' engagement with various monitoring and control methods, such as formal meetings (Brocklehurst, 2001; Taskin and Edwards, 2007; Sewell and Taskin, 2015), reviews and reports (Perlow, 1998; Dimitrova, 2003; Taskin and Edwards, 2007), electronic surveillance (Felstead, Jewson and Walters, 2003) and output evaluations and teleworker trainings (Cooper and Kurland, 2002; Kurland and Cooper, 2002).

However, supervisor understanding and support have been reported to be important in studies on part-time work (Lee, Macdermid, Williams and Buck, 2002; Friede, Kossek, Lee and Macdermid, 2008) as well as on telework (Dimitrova, 2003; Halford, 2005; Richardson and McKenna, 2014). Lirio *et al.* (2008) outlined supervisory behaviours that reflect such support to part-time workers, including trust, management at a distance, protecting and advocating for the employee, and adapting norms and operations at the workplace to the part-time worker. Lirio *et al.* (2008) also highlighted the role of favourable supervisor dispositions towards part-time work in the success of the arrangements, including empathy towards the part-time workers and belief in the sustainability of part-time work, work-life initiatives, workplace diversity and inclusiveness. Studies on telework have reported how supervisors' engagement at a personal level may translate into a kind of paternalistic concern. For example, supervisors may worry that teleworkers are working too hard and may be struggling with working at home without informing their supervisors about it (Halford, 2005) or worry about how to mentor and guide teleworking employees (Kurland and Cooper, 2002).

Whether sceptical or supportive, supervisors play a critical role in how FWAs are experienced. Supervisors often determine whether employees can work flexibly or not and directly influence the perceptions of employees of the management style, quality of communications and the justice of their treatment (Fogarty, Scott and Williams, 2011). Wilton, Páez and Scott (2011) suggested that the acceptance of teleworking may occur by as simple a change as a new supervisor who embraces telework. Similarly, unsupportive supervisors who

choose to withdraw privileges of teleworking may be able to erode the acceptance of the arrangement and undermine the legitimacy of teleworking (Hylmö, 2006; Wilton, Páez and Scott, 2011). Perlow (1998) found that supervisors model behaviour for their employees by, for example, staying late and working long hours, leading to employees not feeling comfortable in leaving earlier than their supervisors and therefore impacting on their use of flexible working hours. Such supervisory behaviours and attitudes can therefore influence the behaviours and attitudes of other group members, whether they work flexibly or not (Perlow, 1998). In addition, several studies have discussed how supervisors need to anticipate the behavioural dynamics that may emerge when managing a group comprised of teleworkers and non-teleworkers (e.g. Felstead, Jewson and Walters, 2003; Lautsch, Kossek and Eaton, 2009). Supervisors have been found to struggle to create cohesion and synergy in such groups (Kurland and Cooper, 2002). They have been reported to fear that teleworkers may become detached, miss opportunities to interact informally with their co-workers and lose their sense of belonging (Kurland and Cooper, 2002; Felstead, Jewson and Walters, 2003), as well as fear that telework may generate resentment and tension among co-workers (Felstead, Jewson and Walters, 2003). In fact, when co-worker interactions are reduced as a result of telework, teleworkers may experience supervisors as their only link to the organisation (Kurland and Cooper, 2002). Rather than developing specific monitoring practices for teleworkers alone, current evidence suggests that continuity and equity in the supervision of teleworkers and co-workers gives the best results, so that both groups are supervised in the same way instead of teleworkers being subject to increased monitoring and scrutiny (Lee, Macdermid, Williams and Buck, 2002; Dimitrova, 2003; Friede, Kossek, Lee and Macdermid, 2008; Lautsch, Kossek and Eaton, 2009). Similarly, studies have highlighted the importance of supervisors offering telework equally to all employees, as when all employees have negotiated the level of flexibility they desire they are more likely to accept the level of flexibility of others (Collins, Cartwright and Hislop, 2013). Scholars have highlighted the value of open and frequent communication channels (Lautsch, Kossek and Eaton, 2009), shared

awareness and work coordination processes (Van Dyne, Kossek and Lobel, 2007) and managing by results rather than presence (Pyöriä, 2003; Coenen and Kok, 2014).

In summary, supervisors may find it difficult to trust employees in the absence of facetime, yet their support and understanding is important. Supervisors play a critical role in groups containing a mix of flexible workers and non-flexible workers, through their behaviours and methods of supervision. However, more aspects also come into play. One of these is the work-related context and the characteristics of the tasks employees undertake. I will discuss this next.

2.4.7.3 Work-related context

Flexible workers, even when defined as professionals, still occupy diverse roles in the organisation, which require different degrees of collaboration (Tietze, Musson and Scurry, 2009; Collins, Hislop and Cartwright, 2016). While the work of some flexible workers is highly autonomous, others require extensive collaboration with co-workers to complete their tasks. Therefore, it is important to consider the work-related context, especially the extent to which the job in question requires employees to interact to complete their job or task, i.e. if there is a high level of interdependence in the work unit or team. Current work rarely explicitly addresses interdependence in relation to the implications of FWAs on relationships, attitudes and behaviours. An important exception is Van Dyne, Kossek and Lobel (2007) conceptual paper, in which authors theorise on the implications of reduced facetime in groups of interdependent professionals. They argue for facilitating work practices at individual and group-level that may reduce problems with coordination and motivation in such groups and increase organisational citizenship behaviours. These practices include collaborative time management (team-centered coordination and synchronised interactions) and redefinitions of contributions (event time and norms for flexibility) at the group-level and proactive availability and strategic self-presentation at the individual-level. However, empirical evidence addressing interdependence in association with FWA use remains scant, especially when it comes to part-time work and flexible working hours. With regards to telework, several scholars

have pointed to the importance of acknowledging interdependence in understanding the effect of telework on co-workers (Gajendran and Harrison, 2007; Golden, 2007). In addition, a number of studies have implicitly addressed interdependence in relation to telework, especially by discussing it in association with task characteristics or need for knowledge sharing.

Studies discussing task characteristics include Dimitrova (2003), who found teleworkers with non-routine tasks adjust better to telework as they were accustomed to working independently and without direct observation, and had more trusting relationships with their supervisor. However, workers engaged in routine tasks were used to extensive work rules and involvement of supervisors in daily work and adapted less well (Dimitrova, 2003). Watson-Fritz, Narisimhan and Hyeun-Suk (1998) suggested that more predictable and structured tasks led to more communication satisfaction among teleworkers and Bélanger, Webb Collins and Cheney (2001) found that complex tasks that require intensive communication resulted in teleworkers feeling less productive. Also, Halford (2005) found that employees would book office days to address particular task-related work for the purpose of engaging in intense interactions with team members. Furthermore, numerous studies have associated teleworking with the individualisation of work, both as a prerequisite for successful uptake of teleworking (Duxbury and Neufeld, 1999; Baruch, 2000; Raghuram, Garud, Wiesenfeld and Gupta, 2001; Halford, 2005; Collins, Hislop and Cartwright, 2016), as well as a consequence of it (Perlow, 1998; Taskin and Edwards, 2007). This means setting up work independently for each teleworker, discouraging communication between co-workers because of it being considered unnecessary and encouraging teleworkers to contact supervisors when in need of help (Collins, Hislop and Cartwright, 2016).

Studies exploring knowledge sharing in relation to telework have discussed the importance of it in interdependent work contexts involving high task complexity (Raghuram, 1996; Pérez Pérez, Martínez Sánchez, Carnicer and Jiménez, 2002; Taskin and Bridoux, 2010). As such, scholars have argued that in cases where intense interactions and complex knowledge transfer (involving tacit

knowledge) between employees is required, telework is less feasible (Raghuram, 1996; Pérez Pérez, Martínez Sánchez, Carnicer and Jiménez, 2002). Taskin and Bridoux (2010) argue that the degree to which knowledge sharing is negatively influenced by telework is determined by factors such as frequency of telework. There may also be an increased need to exchange knowledge face-to-face when trust levels amongst co-workers are low (Golden and Raghuram, 2010) and at the early stages of employment or at the start-up stages of a project to build relationships among team members (Felstead, Jewson and Walters, 2003; Coenen and Kok, 2014).

In summary, no studies explicitly addressed the implications of part-time work and flexible working hours in interdependent work contexts. However, I found that when tasks are characterised by needs of intense collaboration between employees, telework is likely to have a more negative effect because of an increased need to interact. Complex tasks require more knowledge sharing and teleworking is seen to be especially problematic where there is a need to share tacit knowledge.

2.4.8 Review summary

By synthesising 67 studies which addressed various aspects that underpin or are a part of collaboration within workplaces, this review has provided suggestive insights into how collaboration within teams may be affected from FWA use.

The review highlighted that teleworkers find it difficult to maintain their identity and legitimacy within the organisation. Teleworkers were reported as attempting to deal with such issues by increasing their presence and visibility through coming into the office but also made use of the possibilities of electronic communication when face-to-face interactions were not possible. Studies that explored the experiences of co-workers who work with teleworkers reported mostly adverse reactions and frustrations, and suggested that these may be minimised through formalisation, transparency and limiting the frequency of the use.

The review found that much less work had explored the implications of flexible working hours but those studies that did suggested irregularities in working hours can result in negative reactions from co-workers. Studies on part-time work suggest that co-workers find that part-time work disrupts the workflow in the organisation and that part-time workers put in extra work, yet experience marginalisation.

In addition, my analysis of the evidence base revealed that current research is largely focused on higher frequency teleworkers, although lower frequencies of telework is increasingly suggested to be a better approach. However, current research has not recognised the impact of different patterns of part-time work and flexible working hours. Contextual features may also play a role in study findings. Extant research largely reflects organisational contexts in which flexible working (especially telework and part-time work) is not embraced as a normal way of working, which gives rise to social legitimacy problems, marginalisation and frustrations. Supervisors find it difficult to trust in the absence of physical presence, yet their support and management of behavioural dynamics in groups of a mixture of flexible workers and non-flexible workers is critical to success. Finally, the review found that when tasks require intense collaboration between employees teleworking is likely to have a more negative effect. Complex tasks require more knowledge sharing and teleworking is seen to be especially problematic where there is a need to share tacit knowledge. Overall, there seems to be a growing awareness of the role of context and a need to educate supervisors and employees about FWAs, offering these to all employees and establishing shared norms of flexibility.

In the next section I will discuss these findings in the context of Bedwell's (2012) framework of collaboration.

2.5 Drawing the evidence together

In the previous sections I have discussed the main team effectiveness models, their key extensions and how Bedwell *et al.* (2012) built a multi-level theoretical framework of collaboration in this literature. Bedwell *et al.*'s (2012) framework integrates various features presented in the team effectiveness models, such as

temporal, structural and task characteristics, as well as integrates the multi-level nature of teams. After contrasting FWA use in teams with the literature on virtual teams, I presented the findings of a review of the current evidence base in an attempt to understand how the use of FWAs may affect collaboration within teams.

An important observation of the current state of knowledge is the absence of empirical work on the impact of FWA use on collaboration within interdependent work contexts, especially teams. Discussions in the Press about the impact on collaboration and teams may reflect a confounding of virtual work and flexible work and assumption that these work arrangements have a similar impact (e.g. Sommer, 2013). This may be the case with telework at high frequencies, as this practice closely resembles what has been labelled virtual work in the literature. However, the same may not apply to teleworking at lower frequencies, part-time work and flexible working hours. In itself, this observation justifies more research on the topic. However, my review of the evidence highlighted four components of Bedwell *et al.*'s (2012) framework of collaboration, allowing me to make preliminary inferences on how the use of FWAs may impact on collaboration within teams (see highlighted sections in red in Figure 2-3). The highlighted components are emergent states, collaborative behaviours, environmental characteristics and structural characteristics. I will discuss these in the following sections.

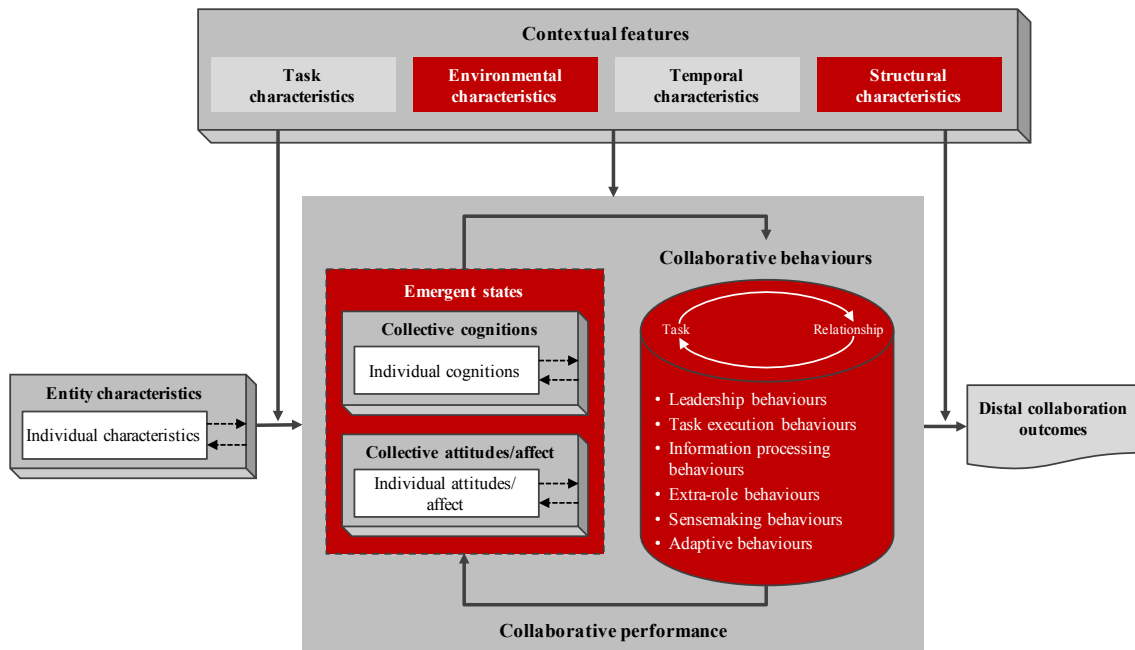


Figure 2-3 Bedwell *et al.*'s (2012) framework with highlighted components

2.5.1 Emergent states

First, I found that current evidence largely reports on the impact of FWAs on what falls under emergent states in Bedwell *et al.*'s (2012) framework. This is reflected by studies reporting the impact on individual attitudes, understandings and cognitions rather than on collaborative behaviours. Among teleworkers, this included issues with identification, legitimacy and belonging in their work unit and, in the case of part-time workers, marginalisation. Studies sampling co-workers found mostly negative reactions and attitudes, such as frustrations and jealousy, both when working with teleworkers and with part-timers (Golden, 2007; Fogarty, Scott and Williams, 2011), which suggests co-workers to be negatively affected by working with flexible workers without being able to exercise any choice about the matter (Beauregard, 2014).

However, the distinctions between flexible workers and co-workers in many studies are worthy of further discussion as in the literature individuals are commonly considered as either working flexibly or not working flexibly at all. Occasional use of telework or flexible working hours among those that are not official flexible workers seems to be largely ignored in current evidence. For example, Fogarty, Scott and Williams (2011) mention that their sample of office

workers have informal flexibility but the implications are not discussed. All or nothing distinctions between FWA users and office-based co-workers and the potential inequities between the groups seem to characterise much of current research on the topic (e.g. Dick and Hyde, 2006; Golden, 2007; Lautsch, Kossek and Eaton, 2009; Collins, Cartwright and Hislop, 2013), which creates a potential threat to a fully integrated team (Felstead, Jewson and Walters, 2003). Such distinctions also echo concerns raised on in-group/out-group being created in hybrid virtual teams, which contain a mix of distributed and collocated workers (Staples and Webster, 2008; Webster and Wong, 2008).

Overall, negative individual attitudes and cognitions of flexible workers and co-workers reported in the literature are likely to affect collective attitudes and result in a negative impact on emergent states such as team cohesion or team empowerment (see Figure 2-3). According to the framework, emergent states then in turn affect collaborative behaviours, which suggests that FWA use may have a negative impact on collaborative behaviours as well.

2.5.2 Collaborative behaviours

Although no studies were found to have examined collaboration directly, the review allowed for some insights into the impact on the six collaborative behaviours denoted in Bedwell *et al.*'s (2012) framework.

Of the six, leadership behaviours have received the most attention in the literature. Studies suggest that those in a management or leadership role need to be aware of the possible implications of FWA use in their work group or unit and should, preferably, adopt equitable supervision where everyone can negotiate the level of flexibility they need (Collins, Cartwright and Hislop, 2013). This is likely to minimise conflicts and enable a more effective execution of tasks, in particular if supervisors ensure open and frequent communication channels (Lautsch, Kossek and Eaton, 2009) and shared awareness and work coordination processes (Van Dyne, Kossek and Lobel, 2007).

The effect on task execution behaviours (i.e. behaviours directed towards completing a task) is reflected in studies that discuss how tasks should best be

organised in order to ensure effectiveness (e.g. Pérez Pérez *et al.*, 2002). These include studies that discuss individualisation of work, which is considered to enable more efficient task execution (through less need for interactions) (e.g. Taskin and Edwards, 2007). These also include studies that argue that the organisation of formal collaboration efforts such as meetings, may allow more efficient dividing of tasks and task execution (Lawrence and Corwin, 2003).

Meetings will also allow for efficient sharing of information and knowledge, which constitutes information processing behaviours (Hinsz, Tindale and Vollrath, 1997). Information processing behaviours are also addressed, to some extent, in studies that discuss the challenges of knowledge sharing encountered in work units containing flexible workers (Golden and Raghuram, 2010; Taskin and Bridoux, 2010), especially in certain contexts, e.g. when trust amongst co-workers is low (Golden and Raghuram, 2010).

Extra role behaviours have received some attention in the literature, as Gajendran, Harrison and Delaney-Klinger (2015) found a positive effect of teleworking on contextual performance, and Van Dyne, Kossek and Lobel (2007) theorised on the impact of reduced facetime on organisational citizenship behaviours directed towards the individual and the organisation. Both studies concluded that, given certain conditions, such as low levels of normativeness of FWA use in the workgroup (Gajendran, Harrison and Delaney-Klinger, 2015) and efficient coordination processes (Van Dyne, Kossek and Lobel, 2007), FWA use may have a positive effect on the two types of extra-role behaviours.

There is less evidence available to allow speculation on the two last types of behaviours denoted by Bedwell *et al.* (2012): sensemaking and adaptive behaviours. Sensemaking refers to making sense of the information one receives and may happen individually or through interactions with others (Weick, 1995). As FWA use results in reduced facetime with other employees, it can be speculated that sensemaking in such contexts may differ from fully collocated contexts with ample opportunities for rich face-to-face interactions. Similarly, there is little evidence available to allow speculations on the impact on

adaptive behaviours (Griffin, Neal and Parker, 2007). However, it is likely that how individuals adapt to changes in a work system or work roles is dependent on contextual features such as outlined in the previous sections, including how FWAs are implemented in the organisations.

Taken together, four of the six collaborative behaviours have received some attention in the literature. Leadership has been found to play an important role and structure has been found to aid in ensuring effective task execution when collaborating with flexible workers. Structure may also aid information processing behaviours although knowledge sharing may be a challenge because of reduced facetime. Finally, FWA use may have a beneficial impact on extra role behaviours, given certain contextual conditions. I will further discuss the contextual features highlighted by current research next.

2.5.3 Contextual features – environmental characteristics

The review further highlighted that findings may reflect contextual features (see Figure 2-3), including environmental characteristics. The fact that teleworkers increase their presence at the office to establish themselves as legitimate employees may reflect that full-time work with full-time face-to-face presence remains the norm. In such contexts, reduced presence, whether a result of teleworking, flexible working hours or part-time work, challenges the identity and legitimacy of the flexible worker as well as professional and personal relationships with other employees in the organisation (Perlow, 1998; Lawrence and Corwin, 2003). The importance of presence, or “presenteeism” (face-to-face presence as a sign of commitment (Dick and Hyde, 2006)) and availability, is further heightened by task complexity and ambiguity, and control of important information inherent to professional work, making flexible workers’ absence more problematic (Lawrence and Corwin, 2003). Such contexts further give rise to what has been described as ‘flexibility stigma’ (Cech and Blair-Loy, 2014) or ‘flexibility bias’ (Munsch, Ridgeway and Williams, 2014; Munsch, 2016), where flexible workers are regarded negatively because they do not adhere to the traditional work pattern. In a culture of presenteeism, suggested by current research to be pervasive, it is likely that presence may be required for

collaboration to happen and therefore that flexible workers' reduced presence may hamper collaboration efforts. These findings also reflect the social information processing underpinning of the study (Salancik and Pfeffer, 1978), by underlining how individuals make sense of their own situation through observations of others and the norms in which they are embedded.

Overall, the impact of FWA use on collaboration is therefore likely to depend on environmental characteristics, in particular the organisational environment, as suggested by Bedwell *et al.*'s (2012) framework.

2.5.4 Contextual features – structural characteristics

Research suggests that limiting frequency of use, especially of telework, may mitigate negative effects of the practice on co-workers and work units, by reducing absences from the office. This implies that negative effects of FWAs are a result of reduced physical facetime of employees (Van Dyne, Kossek and Lobel, 2007) and that successes of collaboration efforts may be dependent upon a sufficient amount of facetime of the employees. The importance of facetime is further supported by studies that emphasise the moderating role of increased face-to-face interactions in addressing interpersonal issues and enhancing social ties (e.g. Duxbury and Neufeld, 1999; Oliver and Roos, 2003; Golden, 2007; Coenen and Kok, 2014). Similarly, within the field of virtual teams, increased face-to-face interactions have been suggested to improve cooperation and coordination and build mutual understanding among employees, which helps to address issues that may arise and lay the foundation for successful collaboration (Andres, 2002; Hinds and Mortensen, 2005). The value put on facetime provides support for media richness theory (Daft and Lengel, 1986), which highlights the superiority and need of face-to-face interactions in collaboration.

However, the studies reported on here do not directly address collaboration and contain limited information on whether the individuals sampled were members of interdependent teams or whether they actually needed to collaborate with each other at all. Other studies have argued that time spent face-to-face is more about quality than quantity, and more facetime may simply lead to more

unnecessary disruptions and less productivity (e.g. Lawrence and Corwin, 2003; Perlow, 1999). The problematisation of reduced facetime as a result of FWA use, especially at higher frequencies, suggests that co-workers should be more able and available to interact because they are present at the office. However, the time and opportunities they have to interact with each other may also be limited. Since empirical work has not yet addressed the impact on collaboration within teams, it can be speculated that the impact of FWAs and the importance of facetime may be more prominent in collaborative and interdependent contexts with higher degrees of task complexity and more frequent interactions required between co-workers (Gajendran and Harrison, 2007; Boell, Cecez-Kecmanovic and Campbell, 2016).

Overall, current research puts value on facetime and suggests that adverse effects can be minimised by minimising absences from the office through reducing frequencies of use. Within Bedwell *et al.*'s (2012) framework, reduced facetime is likely to be the mechanism that explains an impact on collaboration. Furthermore, these findings suggest that structuring facetime by limiting frequencies of use would then impact on the whole process, highlighting the role of structural features (see Figure 2-3).

2.5.5 Research aims and research questions

Although current research has not directly addressed how FWA use impacts on collaboration within teams, current research provides insights into the impact FWA use has on co-workers and work units. These findings are integrated into Bedwell *et al.*'s (2012) framework of collaboration and suggest that collaboration may be negatively affected. However, the review also highlighted the importance of various contextual features, such as frequency of use, organisational culture and norms.

Based on these observations and the lack of empirical evidence on collaboration, I propose an exploratory research design for the main study. The review of the literature further justifies adding a second research question in addition to the main research question. The aim of the study is to understand

the impact of FWA use on collaboration and the research questions taken forward to the main study are:

1. How does the use of FWAs impact on collaboration within teams?
 - a. What contextual features explain this relationship?

2.6 Chapter summary

In this chapter I started by briefly discussing the two main bodies of evidence on which this study is built, FWAs and teams with special attention on collaboration within teams. I reviewed the status of research on FWAs, then introduced the main team effectiveness models that guide research on teams and introduced a theoretical framework of collaboration that was built on these models. I compared and contrasted FWA use to virtual teams before moving to presenting a review, which I conducted where I explored the impact of FWA use on collaboration within teams. Findings revealed no studies exploring the relationship between FWA use and collaboration, but numerous studies provided insights into the impact of FWA use on co-workers and work units. Most studies were focused on telework as a type of FWA and a majority reported the perspective of the flexible workers. Findings of the review are integrated into Bedwell *et al.*'s (2012) collaboration framework, highlighting components suggested by current research as important (Figure 2-3). Overall, findings suggest a negative effect of FWA use on collaboration but this may reflect contextual features, especially environmental and structural characteristics. I conclude by putting forth a research question and a sub-question based on the review findings.

3 METHODOLOGY

3.1 Chapter introduction

In this chapter I will provide a rationale for the research approach adopted to advance the state of knowledge on the topic. In section 3.2 I explain the overall research strategy and the ontological and epistemological underpinnings that underpin the research design of the current study. Section 3.3 explains the methodology of the exploratory study, its main findings and the implications for the design of the main study. In section 3.4 I explain the methodology of the main study, including case selection criteria, data collection and how data were analysed. In section 3.5 I discuss criteria that aid in establishing research rigour, including trustworthiness, dependability, transferability, confirmability and authenticity, and how I addressed these in the main study. In section 3.6 I present a summary of the methodology chapter.

3.2 Research strategy

Having identified a research gap and research questions based on a review of the literature, the next step is to devise a research strategy. Research strategies can be defined as a plan or a process of how research questions will be answered through a series of steps which include a choice of method to collect and analyse data. They are underpinned by ontological assumptions about the nature of reality and epistemological assumptions about how that reality can be known (Bryman, 2012; Saunders, Lewis and Thornhill, 2016). They differ in terms of the use of concepts and styles of explanation. It is important that there is consistency and coherence between the research questions to be answered, the choice of research strategy and the philosophical positioning (ontological and epistemological positions). I will discuss ontological and epistemological assumptions next, followed by the research strategy and research design adopted and my positioning as a researcher towards the topic.

3.2.1 Ontology

Ontological considerations refer to philosophical assumptions of researchers about the nature of reality. The question is whether social entities exist and act

independently of researchers or whether they should be considered social constructions that are dependent on actions and perceptions of researchers (Bryman, 2012). Within social settings, Bryman (2012) differentiates between objectivist and constructionist (or constructivist) ontologies. In objectivism, social phenomena are considered external and beyond our influence and reach, and are seen to exist independently from social actors. They are considered as having the characteristics of an object and therefore as having an objective reality (Bryman, 2012). In organisational settings, objectivism considers organisations as well as the values and beliefs of organisational cultures to be constraining external forces, which members cannot influence. From an ontological standpoint of objectivism, FWA use would be considered an external entity that teams adapt to but have no influence on. Similarly an objectivist ontology would consider an organisational setting and culture as constraining so that it can impact on experiences of FWA use but will not be influenced by it.

However, in constructionism, social phenomena are considered to be dependent on interpretations and constructions of social actors and are continuously produced, revised and revoked through social interactions between members. According to constructionists, a researcher always presents their subjective version of reality and versions of reality may differ depending on each researcher's perceptions and standpoints. As a result, there is no universal objective truth or reality. Within organisational settings, constructionism regards organisational life to be "an emergent reality in a continuous state of construction and reconstruction" (Bryman, 2012, p.34). From a constructionist perspective, individual FWA use may, to some extent, be beyond the influence of other team members yet they continuously react and adapt to it. Organisations, teams and individuals may therefore evolve and adapt to the use of these practices and construct new emergent realities, depending on the interpretations and experiences of team members in each team.

In this study, the focus is on exploring perceptions of the impact of FWA use on collaboration within teams. In doing so I choose to follow a constructionism

ontology, which assumes that the reality produced depends on individual interpretations of social actors (team members) and their experience, which is built from their own individual assumptions and knowledge. A constructionist ontology further allows me to explore and theorise the nestedness of interpretations in societal, sectoral and organisational contexts (Perlow, Gittel and Katz, 2004). As I seek to acknowledge different understandings and the role of the contextual features, I also assume that there can never be a definitive answer since there are many “truths” and truth is always relative to that particular individual frame of reference and the context in which an individual is situated (Bryman, 2012; Easterby-Smith, Thorpe and Jackson, 2012).

3.2.2 Epistemology

Epistemology refers to sets of assumptions about how researchers come to know things – about the different ways of investigating the nature of the world (Easterby-Smith, Thorpe and Jackson, 2012). Generally, epistemological assumptions of research are closely linked to ontological assumptions. As such, an objectivist ontology is generally linked to a positivist epistemology (Bryman, 2012). Positivism assumes that the social world exists externally, independently of researchers, and that rather than examining it subjectively through sensation, reflection or intuition, it should be measured objectively (Easterby-Smith, Thorpe and Jackson, 2012). In emphasising objectivity, positivists assume that observers must be independent from what is observed and that the choice of what and how to study must be guided by objective criteria. Positivist epistemologies argue that science should focus on causal explanations and laws that explain human behaviours, that problems should be reduced to their simplest possible form and methods of study should allow researchers to make inferences to the wider population (Bryman, 2012; Easterby-Smith, Thorpe and Jackson, 2012).

However, researchers who follow a constructionist ontology are usually inclined to an interpretivist epistemology. In general, interpretivists argue that the subjective meaning of social action needs to be incorporated into research and

social constructions. They regard humans as different from physical phenomena because they create meanings and have beliefs and values, which may be constrained by language, culture and history, all of which need to be acknowledged in research. Interpretivists emphasise the importance of appreciating individual differences of interpretations, experiences and meaning, which may reflect different aspects of the issue to be studied (Bryman, 2012; Saunders, Lewis and Thornhill, 2016). They are critical of the attempts of positivists to generalise and create “laws” that apply to everyone, as they see reducing complexity to such “laws” sacrifices rich insights into human behaviours and attitudes (Saunders, Lewis and Thornhill, 2016).

In line with a constructionist ontology, in this paper I adopt a particular type of interpretivist epistemology, which is social constructionism. Social constructionism is particularly focused on human social processes and activities rather than objective artefacts as phenomena of interest (Mills, Durepos and Wiebe, 2010). Social constructionists argue that we need to acknowledge that the ways we develop understanding of the world are historically and culturally specific, and knowledge is collectively sustained and constructed through social processes and interactions of all kinds between individuals. Understanding and meaning is therefore created through conversational, rhetorical, and representational interactions and activities, and social constructionists consider it essential to acknowledge and understand how social relationships influence individual interpretations of the phenomenon of interest (Burr, 1995; Mills, Durepos and Wiebe, 2010). They also argue that knowledge and social action go together. This means that social constructions of the world can be numerous, depending on the situation and collective understandings, which in turn invite different kinds of actions from individuals. Social actors interpret their own actions and experiences, the actions of others and social situations, and act accordingly (Burr, 1995; Blaikie, 2007).

Social constructionism carries particular relevance to this study as teams consist of individual team members with different experiences, understandings and perspectives, which develop social relationships and collectively develop an

understanding of reality. As such, a social constructionist epistemology allows me to explore how teams collectively deal with and experience FWA use based on the different constructions, perspectives and understandings of individuals within each team. This also allows me to explore the impact of the social processes by which the team is constructed and maintained, as well as contextualise interpretations and explore conditions that result in problematisation or non-problematisation of FWA use (Bryman and Bell, 2007; Baxter and Jack, 2008; Easterby-Smith, Thorpe and Jackson, 2012). Furthermore, a social constructionist epistemology does not consider constructs, such as FWAs, as proven or demarcated, but acknowledges that they may be constructed differently depending on individual viewpoints, collective understandings and social contexts. Such constructions and understandings are not given but a product of perceptions which are derived from and reinforced by social interactions within the team (O’Leary, Wilson and Metiu, 2014). This contrasts positivist epistemologies, which, in their assumptions of an objective measurable “truth”, cannot address the complexity of social reality, while social constructionism allows researchers to embrace and incorporate it. A social constructionist approach is particularly well aligned with the social information processing perspective that underpins the research presented here. The social information processing perspective outlines how understandings and interpretations are created within a social environment and a social constructionist epistemology enables me, as a researcher, to explore such differences through an appropriate research design.

3.2.3 Choice of research strategy

Another important task in designing research is to determine the logic through which new knowledge of the phenomenon will be generated. According to Blaikie (2007) there are four primary strategies to answer research questions: inductive, deductive, retroductive and abductive research strategies. Each of these differs in its ontological assumptions, starting points, logic, use of theory and styles of explanations and therefore provides a different way to answer research questions. First, deductive research strategies seek to formulate

possible explanations of regularities that have already been identified, by deducing hypotheses and testing them in a process of trial and error. Second, inductive research strategies seek to determine the characteristics of people and situations and then the nature of patterns of relationships between them with the aim of providing generalisations. Third, retroductive strategies, which also have a starting point in an observed regularity, seek to identify underlying structures and mechanisms and therefore work back from the data to an explanation through use of creative imagination and analogy. Finally, abductive research strategies have the aim of discovering social actors' constructions of reality and how they give meaning to their social world. In order to make such discoveries, researchers need to enter the context of participants' everyday activities, their social world, to explore the reasons behind actions and activities and derive theories from social actors' language, meanings and accounts (Blaikie, 2007). In this study, I adopt an abductive research strategy and seek to come to a scientific explanation of the social world as seen from the participants' perspectives. This requires working bottom up, so as to explore what is happening, in order to explain it in more scientific terms, rather than start the research with preconceived understandings of this reality. My goal is to explore how team members adapt to and experience collaboration within a team containing flexible workers, in the context of their everyday life and explain the realities of participants without preconceptions of their situation, allowing their accounts to emerge through discourse and actions. While abduction is effectively inductive in approach, its specificity is the emphasis on explanation and understanding of participants' worldviews (Blaikie, 2007; Bryman, 2012).

3.2.4 Researcher's stance

Another aspect that is important to acknowledge in scientific research is the relationship between researcher and the researched. According to Blaikie (2007), a researcher has a choice between adopting an insider stance, where s/he acknowledges that s/he is immersed in the social situation, or an outsider stance, where s/he maintains a distance from the social world of the participants. I took an insider stance, as I chose to immerse myself in the reality

of the participants to develop an understanding of their reality. A researcher also has a choice between expert and learner, depending on whether a researcher enters the participants' reality with preconceived ideas based on existing theory or whether s/he seeks to reveal the subjects' own understandings (Blaikie, 2007). I chose to take a learner's stance to be able to explore and understand how participants conceptualise and understand their social world and the impact of FWAs on that world. Finally, a researcher needs to decide whether s/he does research on people (the researcher is an expert undertaking the research primarily for his own benefit), for people (a consultant role, where the research is undertaken for a client or a company) or with people (where the client oversees the research). I see my role as falling between the "research on people" and "research for people" roles as I am studying the experiences of people for my own benefit (to complete a doctorate) yet with the goal to aid organisations in the implementation of FWAs through enhanced understanding of the impact of FWAs (Blaikie, 2007). Importantly though, the study was not conducted for any particular organisation but was rather conducted to enhance understanding of the implications of FWAs for organisations in general.

3.2.5 General research design and qualitative methods of enquiry

An interpretivist ontology and a social constructionist epistemology, as I adopt here, are generally associated with qualitative methods of enquiry, which permit the researcher to explore participant constructions, for example through interviews, observations or focus groups. While qualitative research methods differ significantly, they all seek to allow theory and concepts to emerge out of the richness of the data collected and analysed, seek to see through the eyes of the participants, and understand the role of the context. They also tend to view social life in terms of processes that develop over time, rather than as static snapshots, and prefer flexibility over structure to be able to genuinely reveal the perspectives of participants, rather than possibly contaminating the social world by imposing too much structure to data collection (Bryman, 2012). As a result,

qualitative research tends not to delineate areas of enquiry too much and to ask more general than specific research questions.

A choice of methodology should fit with the current state of knowledge and theoretical development of the field under study. As there has been no empirical work on the impact of FWA use on collaboration and little theorising on the implications of FWA use on other members of organisation in general, the field can be considered “nascent”. In a field with a nascent state of prior theory and research there has been little formal theorising to date or phenomena are new to the world. Fields that are nascent have more open-ended research questions than fields that are mature or intermediate and have known significant theorising. When theory is still nascent, unexpected issues or interconnections may emerge from the data and it is important, because little is known, to ask how and why questions and collect rich and detailed data to extend the understanding of the phenomenon. Qualitative methods therefore fit the state of theory of the topic examined here (Edmondson and Mcmanus, 2007).

Considering the nascent status of knowledge in the field of FWAs, it was deemed premature to assume relationships and test them statistically. Rather, qualitative exploratory methods were deemed appropriate as these allowed me to explore how FWA use would influence collaboration within teams through the collection of rich, in-depth data. As such, a qualitative in-depth approach permitted me to explore the mechanism and processes through which FWA use would impact on collaboration and the contextual conditions that may determine how this happens. This choice of methodology is also informed by the social information processing perspective that underpins this thesis (Salancik and Pfeffer, 1978), as it emphasises an in-depth understanding and acknowledgement of the influence of the social environment in which an individual is embedded on possible outcomes.

An initial step in the data collection was conducting an exploratory study to explore the key issues and challenges in teams containing flexible workers and clarify the focus of the main study. This will be discussed next.

3.3 Research design – exploratory study

The literature review presented in Chapter 2 outlined two issues, which informed my choice to conduct an exploratory study. First, the review found that, to date, no studies have explored the impact of FWA use on collaboration. Instead, current literature provides general insights into the impact on co-workers and work units, and on the attitudes, behaviours and interactions between flexible workers and other employees. Second, research on FWAs has, to date, rarely explicitly incorporated the level of interdependence between employees into research designs, making it unclear whether the employee groups or work units studied need to rely on each other for work-related purposes (for exceptions see e.g. Van Dyne, Kossek and Lobel, (2007) and Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki (2011)). As a result, it remains unclear whether the impact on flexible workers' and co-workers' attitudes, behaviours and relationships reported in the literature to date (e.g. Golden, 2007) would be similar in interdependent teams that need to collaborate. Therefore, an exploratory study was deemed a logical next step. The social information processing perspective (Salancik and Pfeffer, 1978) also informed this decision, as the interpretation of the social setting in which an individual is embedded may differ if employees need to interact with each other frequently for work (are highly interdependent and work in teams) or if they simply work on separate tasks within the same organisation or office space with limited need to interact. An exploratory study further allowed me to draw out and compare the main issues experienced in practice with the issues that have been brought to light in current research. The purpose was to answer a generic research question: "How does the use of FWAs impact on teams?" In this section I will discuss the methodology of the exploratory study, main findings and how they influenced the design of the main study.

3.3.1 Participant selection

The exploratory study involved interviews with flexible working consultants working for consultancies in The Netherlands and the UK, which had assisted organisations in several countries in the implementation of FWAs. They were

sampled using a generic purposive sampling strategy, meaning that they were individually chosen as relevant informants because of their extensive experience and knowledge of how collaborative teams may respond and adapt to FWA implementation and use (Bryman, 2012). Furthermore, as consultants they were external to teams and organisations dealing with such challenges, allowing them to provide a somewhat detached perspective to FWAs' effects on teams, as opposed to individuals from within the organisation. Therefore, they could reflect on what would happen in different teams in different organisations, especially at the early stages of FWA implementation, which is particularly helpful in understanding how teams may react to FWA use and advantageous in the development of a research design.

3.3.2 Method, data collection and analysis

Data were collected through seven qualitative, semi-structured exploratory interviews. An interview protocol was created to serve as a guideline (see Appendix B), with careful concern taken to cover two themes in each interview in order to gain a broad view of the effect on teams. These were the *challenges* FWA use pose to teams and the *strategies* used to address this. The interviews were recorded, with interviewee consent, and transcribed by the researcher. They were analysed using template analysis, where the initial template was developed based on the two main themes from the interview framework and then revised through an iterative process of reading and re-reading the interviews (King, 2004).

3.3.3 Study context – implementation of flexible work programmes

The task the consultants were hired to do was to assist organisations in implementing company-wide flexible work programmes. In most cases a primary goal of such a programme was implementing flexible workspaces, including a different office setup and new furniture designs. This resulted in employees no longer having assigned desks, and being able to choose where to work for the day. Outside of a reduction in office space, the exact design of the programme varied between organisations, with the programme's contents adjusted to suit the purpose of the organisation in question. However, in most

cases, the change to office space was accompanied by increased individual freedom and control in terms of work hours and location, and in some cases part-time work. This was reported to result in a need to analyse and adjust work processes in the team, e.g. organising hours when everyone needs to be present at the office. This would also force teams to react and adapt to FWA implementation as an entity since all team members were affected. This contrasts other contexts in which some individual team members may choose to work flexibly while others do not, in which case the consequences of FWA use become more of an individual issue than an issue the team needs to deal with as a whole.

The fact that the programme involved office redesign and in most cases affected all team members equally, creates some limitations to the findings of this study. However, the goal of the interviews was to obtain a comprehensive oversight of the issues the consultants had encountered in teams in the various organisations they had worked in, with the purpose of profiting from their extensive experience. In the following sections I will highlight the key findings and subsequently discuss them, considering these limitations.

3.3.4 Main findings

3.3.4.1 Challenges

Conceptual issues. First, several consultants mentioned that commonly team members would not have a clear understanding of what FWAs really mean and that they had to deal with employees' pre-set ideas of what flexible working entails. One consultant observed that the image of a remote worker was of someone who worked full-time from home, in line with the first remote workers from 20 years ago, while working at such high frequencies of remote working was, in fact, rare. This lack of understanding was reflected in comments such as: "...so when you were on holiday last week, sorry, no I meant when you were working from home" (Consultant 2).

Individual attitudes. Many of the challenges the consultants were faced with relate to changing employee attitudes as people tend to be set in their old ways.

This means dealing with insecurities and resistance in terms of how the change would affect employees and reflects how the programme was imposed on teams, forcing team members to react to it. The consultants considered this their biggest challenge, more so than managing the consequences of the implementation, such as reduced facetime. They emphasised that a conceptual discussion involving team members was a good starting point to enable employees to discuss the whole concept of flexible working and how it changes fundamental ideas of how to work together and collaborate.

Supervisors. All the respondents had encountered problems with supervisors, especially middle managers. The consultants mentioned that supervisors would often be forced to follow through with management's policy of implementing flexible working, which entails them having to redefine their own position while trying to figure out how to lead a team they don't see very often (Consultant 4). This then affects their status and power, which they often consider hard-earned and well deserved and, in many cases, would lead to a "pocket veto", where they say they agree with the policy but their behaviour shows otherwise (Consultant 6).

Trust. A key element integral to flexible work practices is trust – that employees need to be treated as adults and trusted to do their job. One consultant said he would often make organisations aware of the fact that although some employees may misuse that trust and not perform as they should, these people are likely to have sat behind their computer and done nothing in a traditional work environment as well. Several consultants also pointed out that trust extends to the whole team as it is important to create a culture that allows people to adapt and make mistakes:

"Most important is to have a basis to discuss issues surrounding the phenomenon. If there isn't then there is a problem. There needs to be a space to learn together and grow together. This is key. Group members need to have trust and create a safe culture to discuss issues coming up in those flexible work arrangements."
(Consultant 6).

Level of analysis. Because flexible work is generally considered an individual issue, a big challenge highlighted by the consultants was the fact that people don't understand that flexible working is a collective programme with an individual impact. As such, the choices employees make individually have an impact on others and on the team (Consultant 5). This also means that results should not be individually defined but group defined, which creates tensions between the right of an individual and the results the group need to achieve and how to achieve them. The risk was reported to be that FWAs led to "too little glue and too little excitement on a collective scale" (Consultant 3), referring to that FWAs would primarily be considered a practice to accommodate to individual employees' needs and the impact on the collective, such as on co-workers and the team, would rarely be considered. Therefore, the consultants considered it necessary to pay more attention to the meaning of being a team and how each team member's individual contribution contributes to the collective outcome in order to effectively implement FWAs, because a good team dynamic would mean that other problems (e.g. surrounding FWA use) could better be managed (Consultants 2 and 6).

3.3.4.2 Strategies

Involving the people. To help team members adapt to the implementation of flexible working, the consultants highlighted the importance of engaging and involving them in the implementation process and helping them figure out for themselves how they could benefit from and internalise the change. One consultant explained:

"Good example was that people said their productivity had increased because they were given the task to work out themselves how their productivity could improve instead of it being set by the organisation. For some people it means they need to sit at home and think and other people need to be around people, people need to do it in different ways. The beauty is that you can work it out for yourself and as long as you deliver the end goal nobody really cares how you get there" (Consultant 7).

The behavioural change builds on trust and empowerment and needs to happen from the ground up, which makes it important to use existing structures

and give team members time and opportunities to experience and experiment with the change.

Planning. The consultants did not consider reduced facetime to be a critical problem associated with flexible working. Instead, they agreed that a consequence of implementing flexible work patterns in teams was a need for better planning, both of team members' individual work and also of their collaboration with others. One consultant framed it that flexible work: "...helps people think in a more planned way" (Consultant 4). In practice this means to schedule meetings, appointments, share diaries, organise events and workshops and use virtual tools to keep in touch. One consultant explained:

"...What you see is that they have to make an appointment with one another. OK we will meet on Monday morning between 9 and 12 instead of doing it sometime this week. So they have to plan and book and schedule beforehand instead of just letting it happen. When you plan and book you know exactly what is expected of you and how you can prepare stuff and therefore in the end it can be more efficient for you." (Consultant 4)

Several consultants argued that this new way of working makes people think about what type of team meetings they need and whether face-to-face interactions are necessary or whether electronic communication is sufficient. Teams need to figure this out and set new parameters, e.g. by deciding one day a week everyone should be together at the office, to optimise communication (Consultant 7). Others suggested organising different types of social events to build group cohesion, to make sure everyone has the amount of social and relationship building they need to do their job well (Consultant 2).

3.3.4.3 Effects of FWA use on teams – summary

Answering the research question, the effects of FWA use on teams seem to be dependent upon how these practices are understood and conceptualised in the team as well as upon the attitudes of individual team members and supervisors. To maximise the benefits of these practices it is important to trust flexible workers, enable discussions about the practice and establish a culture of trust within the team. Moreover, all parties need to be aware that these individual

practices have a collective impact. The findings suggest that it is important to involve individuals in the implementation stage and get them to think about what the team needs to achieve and to what extent individuals need to work together. Proper within-team planning of alone time and collaborative time can minimise negative effects on teams.

3.3.5 Discussion and informing subsequent work

The exploratory study provided an overview of the key challenges that teams containing flexible workers face as well as strategies to address them and highlighted several issues, which are important to take forward into further research on the topic. The fact that the consultants' work involves implementing a mandatory change programme sets a certain stage for the exploratory study, insofar as the findings may not apply in other settings. That said, this setting illuminated two issues, which informed and clarified my argumentation in moving forward.

First, it highlighted the importance of research being clear on how FWAs are being conceptualised and understood in the context being researched. In many organisations, FWAs are individual work arrangements, negotiated with specific employees such as those with young families, which can lead to fairness and justice issues among other employees (e.g. Beauregard, 2014) and to interpersonal issues if those allowed to work flexibly are perceived as privileged as opposed to other team members (Lautsch, Kossek and Eaton, 2009; Collins, Cartwright and Hislop, 2013). In the context of the exploratory study, however, FWAs were available to all employees. The consultants reported that because all team members would have the same access to FWAs, justice and frustration issues would be minimised. Moreover, they argued that team leaders and members were likely to better plan their work and structure their communication leading to an overall better within-team organisation and the possibility of the creation of a flexible culture in the team since all team members would be equally flexible. This is in contrast to the context in which current research generally seems to be conducted, where flexible workers are an exception to the norm. It is interesting to observe that the consultants encountered important

challenges, even when FWAs were available to all and endorsed by management. Although this may reflect that consultants were present only at the initial stages of implementation, it still raises the question of whether supportiveness and organisational endorsement may not be sufficient to minimise negative effects. This finding further emphasises the importance of exploring the role of contextual features in the impact of FWA use on collaboration (see Figure 2-3 Bedwell *et al.*'s (2012) framework with highlighted components).

Second, the consultants did not consider reduced facetime to be a key issue when it came to FWA use in teams. Instead, they argued that facetime could be managed through planning and organisation of meetings and events. In their view, the main challenges were the different individual attitudes and the subsequent need for the creation of a mutual understanding of FWAs within teams. This goes against the prevailing argument in the literature that the key challenge of FWA use is reduced facetime (Lawrence and Corwin, 2003; Van Dyne, Kossek and Lobel, 2007; Taskin and Bridoux, 2010). Perhaps it reflects the nature of the consultants' work that the programme is mandatory for everyone and therefore forces teams, as a unit, to better plan and organise themselves. It may also reflect the fact that the consultants only observe the initial stages of the change when the most individual resistance is likely to be encountered. In any case, the consultants raised an interesting question of whether facetime is indeed as essential as is currently suggested by the literature. It is therefore an important element to further explore and understand. This finding also suggests that structural characteristics, such as planned interactions, may minimise the impact of FWA use on collaboration (see Figure 2-3 Bedwell *et al.*'s (2012) framework with highlighted components).

Finally, the exploratory study highlighted two other elements worthy of consideration when looking at FWA use and teams, which are only acknowledged to a limited extent in existing research. First was the importance of trust in teams (e.g. Golden and Raghuram, 2010). Trust within teams helps in dealing with individual attitudes, thereby reducing tension in relation to FWA

use. The level of trust within teams can therefore help explain the effects of FWA use and should be explored in subsequent research designs. This may alter entity characteristics so that teams characterised by higher levels of trust may more easily adapt to FWA use within the team than those with lower levels of trust (see entity characteristics in Figure 2-3). Second was the important role of the team leader as having a big influence on the team dynamics, e.g. if a team manager is an active advocate of these practices he or she sets an example for the team on how to accommodate FWA users. Similarly, if a team leader is against FWAs, his/her attitudes can negatively affect the dynamics of the team. Team leaders can therefore serve as an enabler or barrier in a team's adaptation to FWA use.

Overall, the findings of the exploratory study raised questions regarding the role of the contextual features that may play an influencing role in the impact of FWA use. They further highlighted the importance of understanding the impact of FWA use on facetime within collaborative teams. As a result, there is a need for research that produces an in-depth picture of how FWA use impacts on collaboration within teams and identifies the contextual features that explain this relationship. This may help illuminate whether the extent of facetime needed in teams may be a result of how the team is set up, how work is structured and organised between team members, or a result of high levels of task interdependence (Wageman, 1995; Lepine *et al.*, 2008; DeChurch and Mesmer-Magnus, 2010). Furthermore, it may illuminate whether productive interactions and work processes are more likely when team members trust each other (e.g. De Jong and Elfring, 2010).

Therefore, the exploratory study highlighted similar issues to the literature review. The exploratory study further emphasised the importance of acknowledging the role of context in study findings and in explaining challenges in dealing with FWA use, even in supportive organisations. The research questions taken to the main study therefore remain the same:

1. How does the use of FWAs impact on collaboration within teams?
 - a. What contextual features explain this relationship?

3.4 Research design – main study

In this section I will rationalise and describe the approach I adopted to answer the research questions, the research design choices made, the data collected and how they were analysed.

3.4.1 A case study approach

In order to answer the research questions, I chose an exploratory case study method (Yin, 2014). Collaboration is in itself a complex social phenomenon that involves numerous individuals working together in a specific context. Current research has not been able to grasp how FWA use affects this complexity and the exploratory study further emphasised that various contextual features may explain the impact of FWAs in different settings. A case study method can allow me to embrace this complexity in an attempt to understand a contemporary phenomenon (FWA use) within a real world setting where context is of key importance (Yin, 2014). A case study method can increase understanding of the impact of FWA use on collaboration within teams for three additional reasons. First, informed by the social information processing perspective (Salancik and Pfeffer, 1978), the use of FWAs is understood in different ways by different individuals and impacts on individual team members in different ways, depending on whether they use such practices themselves or not. A case study method allows me to incorporate these different understandings and conceptualisations, by collecting data from multiple respondents within a team (Yin, 2014). Second, a case study approach allows me to incorporate multiple sources of data (e.g. interviews and observations), which allows building a more comprehensive understanding of what is happening in the team. Third, the in-depth insights gained by a case study approach allow me to develop an understanding of the role of various contextual features that may affect behaviours and experiences, which are difficult to grasp through other methods.

Furthermore, I have chosen a multiple-case design, while keeping the number of cases at a minimum in order to achieve an in-depth understanding of each one. A multiple case approach permits me to examine experiences across cases and enables a comparison of differences and similarities between them.

It also allows for identification of the impact of different environments on individual cases as well as an exploration of the specific conditions under which a finding might occur (Mills, Durepos and Wiebe, 2010). The purpose of including multiple cases is to determine what is unique and what is common across cases in order to build a more robust theory. It allows me to better establish the circumstances in which a theory will or will not hold and case comparison may suggest additional factors or concepts that may have implications for an emerging theory (Eisenhardt, 1989; Bryman and Bell, 2007; Eisenhardt and Graebner, 2007).

3.4.2 Level of analysis

I define a team as one case. The level of analysis is therefore the team. However, data were collected from individual team members, but care was taken to ask questions about the team rather than individuals and focus on the impact on the team as a unit rather than on individual members.

3.4.3 Case selection strategy

I chose to select cases that were exemplifying, with the purpose of capturing the circumstances and conditions of an everyday situation (Yin, 2014). This means cases were not chosen because they were extreme (e.g. those where FWA use was enthusiastically encouraged or where organisations were predominantly against them). Rather, cases were chosen because they represent a broader category of cases (teams which contain flexible workers) and because they provided a suitable context (organisations with interest in FWAs) to answer the research questions. Furthermore, choosing exemplifying cases allowed me to explore the social processes that may underpin or develop as a result of FWA use in normal everyday situations. Extreme cases may provide extreme examples of such social processes, which may not represent the norm in organisations in general. Selecting cases in organisations with a general interest in FWAs was considered to provide an apt context for answering the research questions (Bryman, 2012).

In the process of determining the cases to be studied, several predetermined criteria had to be met to limit the influences of differences in organisational or team-level factors and to permit valid case comparison. The case selection criteria pertained to two levels, organisational level and team-level criteria, which will be discussed next and are presented in Table 3-1.

3.4.3.1 Organisational criteria

It was important that the teams operated in comparable organisational contexts, in order to limit differences due to other organisational factors. I set forth three criteria for the organisations (see Table 3-1).

Firstly, I focused the study on medium-sized organisations, i.e. organisations with 50-200 employees (e.g. Clear and Dickson 2005; Jack, Hyman and Osborne 2006). Medium-sized organisations are generally regarded as having a more informal and *ad hoc* culture, often established and dependent on the attitudes of their owner-manager (Jack, Hyman and Osborne, 2006; Mayson and Barrett, 2006). This means the organisation has a more or less uniform culture while larger organisations are more complex and nuanced, and middle managers are likely to interpret predetermined rules and policies in their own way, creating multiple cultures within one firm (Jack, Hyman and Osborne, 2006). Furthermore, small and medium-sized organisations (SMEs, i.e. those with less than 250 employees) have an important role in the economy, as they represented 99.8% of enterprises in the non-financial business economy in the European Union in 2014 (Eurostat, 2017c). SMEs are regarded as key drivers for employment, innovation and economic growth in the EU and in 2014 two thirds (66.8%) of the EU's non-financial business economy workforce was employed in a SME (Eurostat, 2017c). In the Information and communication sector (in which the organisations studied in this thesis were operating) medium-sized organisations represent 16,8% of employment in the Netherlands and 16,1% in Belgium (the countries in which the organisations studied were located) (Eurostat, 2017b). However, regardless of their important role organisations with less than 250 employees attract much less research attention in the field of human resource management than larger firms do

(Nadin, Cassell, Older-Gray and Clegg, 2002). This is especially the case when it comes to work-life balance initiatives such as FWAs (Cegarra-Leiva, Sánchez-Vidal and Cegarra-Navarro, 2012).

Second, the nature of the work of the teams had to be comparable and the teams needed to rely on high levels of collaboration between team members to be able to produce a desired end result. In order to satisfy these criteria I chose software development organisations and software development teams. Software development teams are known to rely on extensive collaboration, exchange and integration of knowledge, ideas and know-hows as well as feedback from each other regarding products and processes (e.g. Andres, 2002; Espinosa *et al.*, 2007; Ghobadi, 2015). Furthermore, as a type of knowledge work, software development includes both individual and interdependent components, which can often not be fully standardised or planned out in advance as individuals may become stuck and require assistance from fellow team members (Perlow, Gittel and Katz, 2004). Also, the nature of the work conducted in software development easily allows for the implementation of FWAs, because of the potential use of collaboration and communication technologies that facilitate exchanging information across distances (Espinosa, Slaughter, Kraut and Herbsleb, 2007). Distributed software development in virtual teams, often across countries and time zones, has been subject to growing interest in public and academic domains in recent years. However, studies commonly focus on the enabling role of technology in such geographically distributed collaboration or on the challenges surrounding team heterogeneity due to high levels of cultural differences in the team (Ghobadi, 2015). Use of FWAs in software development has received less attention and the studies that have looked at the use of FWAs are often conducted in very large organisations adopting survey designs (Golden, 2006, 2007; Golden and Raghuram, 2010), which cannot capture the behavioural dynamics that emerge with different levels of FWA use in such teams.

Third, the organisations had to allow for some level of FWA use amongst their employees. This was determined by publicly available information on

organisations, such as awards for good places to work or by reading job advertisements promising prospective employees some level of flexibility.

3.4.3.2 Case criteria

Having determined the criteria at the organisational level that allowed me to recruit organisations, additional team inclusion criteria were set forth in order to ensure comparability between teams (see Table 3-1). Team members in each team needed to perceive themselves as a member of that particular team to avoid issues surrounding team identity and multiple team membership (O’Leary, Mortensen and Woolley, 2011). Teams needed to have worked together for a minimum of three months to minimise issues as people learn to work together and 75% of members had to have been a part of the team for three months or longer to rule out issues due to member fluctuations (Hollenbeck, Beersma and Schouten, 2012). Finally, teams needed to have a minimum of four members and maximum of ten to avoid complexities associated with size (Casey-Campbell and Martens, 2009).

Table 3-1 Organisational and case criteria

Criteria	Rationale	Case criteria
<i>Type of work</i>	Highly collaborative nature of work suitable for this research	Software development teams
<i>Organisational context</i>	Comparability between teams operating in different contexts	Medium-sized organisations
<i>FWA use</i>	Purpose of research	A minimum of one FWA user
<i>Team identity</i>	Team members need to perceive themselves as a part of a team	Clear team identity and clear boundaries
<i>Team life span</i>	Rules out issues as people learn to work together	Minimum 3 months
<i>Team membership</i>	Rules out issues due to member fluctuations	75% of members have been a part of the team for 3 months or longer
<i>Team size</i>	Avoids complexities associated with size	Minimum 4 members, maximum 10 members

3.4.3.3 Number of cases

Two factors determined the total number of cases included in the study as well as the number of included organisations. First, I chose to examine a minimum of two teams in each organisation in order to develop an understanding of

differences amongst teams operating within the same organisational context, yet containing different individuals. This allows an understanding of the role of organisational context in how FWA use impacts on collaboration within teams but also allows comparison of other factors to be made between different organisations. Second, the exact number of cases was guided by the principle of data saturation, i.e. when additional cases bring no new information forth or the same issues are repeated, no more case studies will be conducted (Mills, Durepos and Wiebe, 2010). Since I focused the study on the context of medium-sized organisations, the organisations employed a limited number of people and the total number of software development teams in each organisation ranged from 3-6 teams per organisation. However, not all teams met the criteria of inclusion, which limited the number of teams applicable for this study in each of the organisations. Therefore, after studying a total of five teams in two organisations it became evident that recruiting a third organisation would provide a more in-depth answer to the research questions and allow me to better identify the contextual features that determine the impact of FWA use on collaboration. As a result, a third organisation was recruited and two additional teams were studied. During the data collection in the third organisation a clear pattern started to emerge, as themes emerging fitted themes already identified in the teams of the other two organisations. Subsequently, data saturation was considered to have been reached, meaning additional data collected would provide few, if any, new insights (Saunders, Lewis and Thornhill, 2016).

3.4.3.4 Criteria result: The cases

The organisational and case selection criteria resulted in the inclusion of a total of seven teams (Navi, Castor, Electra, Propus, Gemma, Sirius and Media) nested in three organisations (Polaris, Libra and Orion) in The Netherlands and Belgium. The organisations were identified by searches through personal contacts of the researcher as well as by using LinkedIn, a social media website commonly used for professional networking, recruitment and sharing of professional information across the world. Most often the teams were selected based on initial discussions with the head of software development in each

organisation. However, some teams were excluded after data had been collected as a result of the realisation that they did not fit the case selection criteria. The details on the cases, their key characteristics and the organisational context in which they were situated can be found in Appendix D and will be discussed further in Chapter 4.2.

3.4.4 Data collection

Data collection on each case primarily consisted of semi-structured interviews with team members and team leaders, as well as with members of management. In addition, observations of team meetings and physical surroundings in which the teams operated served as an additional source of data, primarily to understand the context and culture in which the teams operated (see Table 3-2 for purpose of data collected). Supplementing interview data with observations allowed me to obtain detailed in-depth data describing each case and how FWAs are enacted and dealt with in each team (Yin, 2014).

Table 3-2 Purpose of data collected

Data collection method	Purpose	Data source
<i>Observations</i>	Background information on team context	Publicly available documents (e.g. website), site visit
	In-depth understanding of team culture	Team meeting
<i>Interviews</i>	Background information on team context	Informal conversations with CTOs, project managers, coordinators and other personnel
	In-depth understanding of collaboration	Team leader perspective
		Team members' (FWA users) perspectives
	Team members' (non-FWA users) perspectives	

3.4.4.1 Interviews

The purpose of the interviews was to understand how team members experienced working in the team and their experience of how FWAs were affecting collaboration within the team. They were conducted with both those working flexibly as well as those not, in order to gather different perspectives. This allowed me to address the fact that in order to create a full picture of how

FWAs are really affecting collaboration within teams, perspectives of different stakeholders such as flexible workers, non-flexible workers and team leaders need to be explored (Golden, 2007; Allen, Golden and Shockley, 2015), which is aligned with the social information processing perspective (Salancik and Pfeffer, 1978). The interviews were semi-structured in nature, which means that a list of questions was created that was used to guide the interviews. However, the interview process was flexible in that the interview did not always follow the guide, although care was still taken to cover all the questions set out in the protocol at one point or another. Care was also taken not to ask leading questions or guide the interviews too much but to let respondents respond in their own way (Bryman, 2012; Saunders, Lewis and Thornhill, 2016). The interview guide is presented in full in Appendix C. The questions were focused on the team as a unit, not on individuals, since the unit of analysis in this study is the team. The overarching themes represent my focus to obtain a general understanding of how the team operated and collaborated, how they communicated with each other and what the overall culture was within the team and organisation, with the purpose of understanding how FWA use was affecting the team. Emphasis was put on what the participant experienced as being important when explaining patterns and forms of behaviour. Furthermore, general information on each respondent was collected at the end of each interview, covering name, age, gender, position in organisation, number of years employed and number of years/months involved in the team. The interview protocol was piloted on two individuals who work in professional teams similar to those that were researched in the proposed study. It was also reviewed by two management scholars, which suggested improvements to some of the questions. The comments from the pilot and from the scholars were used to adjust and refine the protocol before embarking on the first case.

3.4.4.2 Observations

The main purpose of the observations was to develop an understanding of the organisational and team context. They allowed me to develop my own understanding of the participants' social world at the workplace and immerse myself in the activities that to them were an everyday occurrence (Saunders,

Lewis and Thornhill, 2016). Observations of the office space allowed me to develop an understanding of the physical context in which the teams operated (e.g. the building, open spaces, closed offices, collective lunch room). Observations of team meetings allowed me to develop an understanding of the teams, team member interactions and team culture (e.g. friendly, casual, stressed). At the beginning of a meeting, I was introduced to the team but was subsequently seated in a quiet corner of the room and did not participate, but listened in to the meeting. My role could be described as observer-as-participant, meaning that although I passively placed myself in a corner and did not participate in the meeting in any way, my purpose was still known to participants and they were aware of my presence (Easterby-Smith, Thorpe and Jackson, 2012; Yin, 2014; Saunders, Lewis and Thornhill, 2016). Meetings in Polaris were conducted in English to accommodate my presence and difficulties in understanding Flemish, which was their working language. However, meetings were conducted in Dutch in Libra and Orion in order to limit the influence of my presence on the participants and because I could understand Dutch. The presence of a reactive effect as a result of team members knowing that they are being studied, which may affect their behaviours, cannot be ruled out, especially in the case of Polaris as they conducted their meetings in language other than their working language (Bryman, 2012). However, as observations only served as a supplementary source of data to the interviews, the role of a reactive effect is likely to be minimal as observations could be compared with comments made in the interviews. Instead, observations allowed me to gain deeper insights into contextual and cultural factors that may affect the team but team members may take for granted. They also allowed me to experience team member interactions directly so that I could build my analysis not only on narratives of others but also on my own observations (Mills, Durepos and Wiebe, 2010).

3.4.4.3 Data collection procedure

Having negotiated access, I had a conversation with each head of software development, via telephone and subsequently e-mail, during which we decided on a date when it would suit the organisation for me to come to conduct my

study. The head then went on to introduce me, my topic and study to the software development teams, so that everyone would be aware of the purpose of my visit. I spent three days in Libra (from Monday to Wednesday), two days in Polaris (Monday and Tuesday) and three days in Orion (from Monday to Wednesday). Data collection happened in November 2015 in Polaris, February 2016 in Orion and March 2016 in Libra. In all organisations, I started with an introduction interview with the head of software development to enable me to understand the set-up of the software development department, the teams, organisation of work processes and meetings and the different roles within the teams and the organisation. The meetings also gave initial insights into the organisational culture and traditions. The head of software development then walked me through the office and showed me the main areas, especially those with relevance to the software development. I then continued the data collection in all organisations by observing a team meeting of one of the teams, after which I began interviewing team members. In all three organisations, most interviews were scheduled *ad hoc*, meaning that I would walk up to respondents and ask them if they had time to come talk to me, which they were usually fine with. However, for some respondents the heads of software development had set up a formal interview for a specific time, due to these respondents time constraints and multiple responsibilities. These were mostly individuals with management responsibilities. I was informed of meeting times of all teams, allowing me to combine meeting observations with interviews and therefore self-schedule interviews around meeting times. In all organisations, I was given an office space to be able to interview participants in private. I could walk around the office space freely and join staff for lunch and coffee breaks. At the end of the last day of data collection I had a short follow-up conversation with the head of software development (except for Libra, as he was absent), during which any issues, additional questions and follow-up could be addressed.

In most teams all team members were interviewed and weekly meetings and 'stand-ups' were observed, i.e. if the team had them (for details of cases see Appendix D). If a team member was not interviewed this was due to the fact that the member had started working for the company within the last month or that

90% of the team members had already been interviewed and data saturation had been reached. Interviews lasted between 25 minutes and 75 minutes, with an average interview lasting around 40 minutes. A total of 42 interviews were conducted with team members and 9 with members of management across the three organisations. Interviews were all conducted in English and face-to-face with the exception of one interview in Polaris and two in Orion, both of which were conducted via Skype after data collection on-site had ended. The three respondents had all been absent during the days of data collection because of holidays or sick leave. Interviews were all recorded with consent from the respondents. Interviews were later transcribed with the help of a professional transcriber. After having received transcripts, I listened to the recordings of each interview and made corrections to the transcription when necessary in order to ensure transcriptions were correct. Meetings were observed and notes made but these were not recorded. Notes made were primarily centred on behaviours, body language, atmosphere, friendliness, tone of voice used etc., and not on content *per se*. During analysis these notes were used to build insights into the team, in particular relationships between individuals, culture and behavioural dynamics. In addition, observations were made of the organisations' buildings and office environment, in order to gain further insights into the organisational context and culture, in which the teams operated. An overview of the data collected can be found in Table 3-3.

Table 3-3 Overview of data collected

Organisation	Polaris		Electra		Orion		
<i>Context / management informants</i>	CTO		CTO, software development coordinator, internal processes coordinator		CTO, head of operations, head of backend development, head of frontend development, senior application architect		
Teams	Navi	Castor	Electra	Propus	Gemma	Sirius	Media
<i>Team member interviews</i>	Six	Six	Five	Eight	Five	Five	Seven
<i>Meeting observations</i>	Weekly planning meeting	Weekly planning, retrospective and prioritization meeting	Daily stand-up meeting	Daily stand-up meeting, weekly planning and retrospective meetings	Daily stand-up meeting	No meetings observed	Daily stand-up meeting

3.4.5 Data analysis

A multiple case design requires data to be analysed within the frame of a case first. This means that all data collected within a case are carefully examined and analysed until a full account of each case has been developed (Mills, Durepos and Wiebe, 2010). In order to analyse the data I used thematic analysis to identify, analyse and report patterns across the dataset in order to find repeated patterns of meaning. I adopted a data-driven, abductive analysis approach, where I allowed themes to emerge from the interviews without using any *a priori* coding frame. This was in line with the social constructionist epistemology of the study as it emphasises deriving theory from social actors' meanings, language and accounts from within their everyday activities (Blaikie, 2007). It further allowed me to take an insider view, staying true to the accounts of the participants, rather than relying on themes from the limited existing evidence based on the topic. The purpose is to analyse at the latent level, which permits identifying the underlying assumptions, ideas and conceptualisations and "to theorise the socio-cultural contexts, and structural conditions, that enable the individual accounts that are provided" (Braun and Clarke, 2006, p.14).

The analysis proceeded in a recursive and iterative way that moved along a continuum from description to interpretation to abstraction, with the purpose of developing latent themes and an analytical narrative of what the data are saying (see

Table 3-4) (Braun and Clarke, 2006). I coded interviews of individual team members and compared and contrasted themes and sub-themes as they emerged from interviews of members of the same team, by applying principles drawn from Glaser's (1965) constant comparative method. I then further reviewed emergent themes, together with notes from observations, to create a narrative of key themes and of how the team was handling and managing individual FWA use. The goal was to create initial theoretical frameworks from each case, which explain how FWA use impacts on collaboration. All data were analysed with the aid of NVivo software, a software tool that assists researchers

in the analysis and organisation of qualitative data, i.e. interview transcripts, demographic details and notes made during data collection. NVivo was used to organise portions of text into themes called nodes and in an iterative process create subnodes, merge nodes, cluster them and move them around. The final analytical coding structure as well as the source and reference count supporting each theme is outlined in Appendix E. Themes emerged in a process of primarily descriptive to increasingly analytical coding. An example is the code of facetime, which was initially a generic code of “value of face-to-face” but through re-reading of references was later recoded as “value passive facetime”. Some of the initial descriptive codes, such as those on team culture and organisational context remained descriptive and allowed me to describe the contextual setting of each team and organisation.

After an initial narrative had been created for each case, I compared cases, again applying principles drawn from Glaser's (1965) constant comparative method. This process was iterative and involved comparing and contrasting patterns across case narratives in four steps. First, I compared themes across cases to identify the extent to which the same themes arose in the different cases, while considering whether they meant the same in each case. Second, I built an understanding of the variations within and across cases in an exploration of the factors that determine why and when the themes came to light. Third, having outlined the differences and similarities across cases I delimited the theory, by drawing up relationships between themes and sub-themes that applied across cases. Finally, the cross-case analysis was written up in an analytic narrative, explaining the phenomena of interest in the context of the different cases (Eisenhardt, 1989; Mills, Durepos and Wiebe, 2010). In a process of comparing and contrasting the initial framework to previous work on the topic, the framework was further realigned and emerging features and characteristics moved around. The outcome of this process was a theoretical framework, built upon the framework of Bedwell *et al.*, (2012), which explains how and under what conditions FWA use impacts on collaboration within teams and thereby answers the research questions.

Table 3-4 Analytical process (Braun and Clarke, 2006)

Analytical Process	Practical steps
<i>1. Familiarising yourself with the data</i>	Transcription of data. Importing into software. Reading and re-reading the data. Initial notes.
<i>2. Generating initial codes</i>	Open coding. Systematically reviewing the data in order to identify and code interesting elements of the data.
<i>3. Searching for themes</i>	Categorization of codes. Identification of themes into which codes can be organised.
<i>4. Reviewing themes</i>	Further iterations and refinement of themes. Comparing themes to dataset, re-reading and re-coding. Generate a thematic 'map' or hierarchies of themes.
<i>5. Defining and naming themes</i>	Further abstraction and synthesis across themes. Define and re-define themes, identify the essence and specifics of each theme and identify sub-themes. Identify the overall story the analysis tells, generate clear definitions and names for each theme.
<i>6. Producing the report</i>	Producing an analytical narrative of the findings identified through the analysis procedure described by steps 1-5. Create a concise, interesting, coherent and logical account of the overall story discovered in the data. Relate it back to the research question and literature.

3.5 Establishing research rigour

In positivist studies, study quality is generally assessed using concepts of validity (internal, measurement, ecological and external), reliability and replicability. However, some scholars argue that these may not be appropriate for qualitative research nor for the evaluation of case study research. As the current case study is solely adopting qualitative methods, I will discuss research rigour using the concepts of trustworthiness and authenticity, which have similarities to the research criteria of quantitative research (Bryman, 2012).

In determining the trustworthiness of a qualitative study, four criteria should be fulfilled: credibility, transferability, dependability and confirmability (Bryman, 2012). Credibility shares similarities with internal validity and refers to how believable the study findings are. Establishing credibility means both ensuring that research is carried out according to the norms of good practice and submitting findings to the participants studied in order to seek confirmation that

the researcher understood the world in which they were situated correctly. At several stages during the analysis procedure I contacted the CTOs again in order to confirm observations or ask for additional contextual insights, for example, on the presence of formal policies surrounding telework, part-time work and flexible working hours. After analysis had been completed and study findings had been written up and presented to panel members, a report of the findings was created for the three organisations. These were mailed to the organisations with requests for any commentary or additional thoughts. None was received.

Transferability, similarly to external validity, refers to whether findings apply to other contexts. This is generally not the case with qualitative study findings – rather, qualitative researchers should provide significant details of the study setting so that others can make judgements about the possible transferability of findings to other situations. I have addressed this by providing detailed descriptions of the setting of the study, including the teams, organisations and the national context (see section 4.2). The thorough descriptions provided enable other researchers to assess the uniqueness of the findings and permit them to themselves judge the applicability to other contextual settings.

Dependability, equivalent to reliability, refers to whether findings may apply at other times. In order to ensure dependability, researchers should keep detailed records of the entire research process, from the formulation of research questions to the analysis of data collected. By keeping such records, peers can become auditors and check whether procedures have been followed and whether they would have come to the same conclusions. My philosophical assumptions are recognised in the section on research strategy. I also openly address my stance towards the subject and the possible effects of my presence and behaviour on the participants both during observations and interviews. In order to check the inter-rater reliability and consistency of my coding and look for possible biases, I asked a fellow doctoral researcher to analyse the coding of six transcripts of individual team members in six different teams and compare them to the coding structure that emerged. She agreed with the coding structure

and the analysis procedure and found no evidence of bias (Bryman, 2012). However, she made minor comments on how cultural codes in fact reflected value being put on face-to-face presence, further supporting a facetime culture being in place in the organisations. These comments were taken into account and led to minor alterations in the presentation of the findings.

Finally, confirmability, equivalent to objectivity, refers to the importance of recognising that a researcher's role, personal values or judgements may influence or sway the conduct of the study. A researcher's role in the construction and development of understanding and knowledge in qualitative work stresses the importance of continuous awareness and attention being paid to the influence of the researcher in the process of knowledge development (Easterby-Smith, Thorpe and Jackson, 2012). This can be addressed by openly discussing values or judgements that may have influenced the analysis procedure. I cannot eliminate my own values from affecting the study but by openly discussing my values and underpinnings throughout I can minimise any impact they may have. I have also actively sought feedback on the study findings by engaging with my panel, my supervisor, other doctoral researchers at doctoral colloquia on two occasions and at several academic conferences and workshops. Such occasions have aided in the interpretation of literature, study design and findings. Engagement with others has therefore allowed me to better make sense of and reflect on my study and its findings, minimising the impact of my own values.

Additional criteria of authenticity have also been suggested as being of importance and raise a set of issues concerning the wider impact of research. These criteria include fairness, i.e. whether the study fairly represents different views of members of a social setting. They also include ontological authenticity (whether the study aids members in better understanding their social setting), educative authenticity (whether the study helps members to better understand the perspectives of other members of their social setting), catalytic authenticity (whether the study has given members the push to take action to change their circumstances) and tactical authenticity (whether the study has inspired

members to start taking action) (Bryman, 2012). All of these factors have been addressed by feeding the study findings back to the organisations allowing them to use them to guide implementation of FWAs, should they wish to.

3.6 Chapter summary

In this chapter, I have outlined how I adopted an interpretivist ontology and a social constructionist epistemology, which emphasises how knowledge is socially constructed. I have outlined how I chose an abductive research strategy and took an insider and learner stance to my research subject – teams containing flexible workers. I further explained how I adopted a qualitative methodology, which involved an exploratory study as an initial step. The exploratory study consisted of semi-structured interviews with consultants and the findings informed the research question and design of the main study. The main study consisted of a multiple case study approach in which a case is one software development team. Cases were primarily built from team member and management interviews but observations provided additional contextual insights. Each case was selected based on a predetermined case selection strategy. I describe the data collection and analysis procedures and finally discuss concepts that are important to address in order to establish research rigour.

4 FINDINGS

4.1 Chapter introduction

In this chapter I present the findings of the case studies. In section 4.2 I discuss the contextual setting of the seven cases. In section 4.3 I describe how FWAs were experienced and impacted on collaboration. I describe how the three types of FWAs, part-time work, flexible working hours and telework, resulted in reduced passive facetime at the office and therefore negatively impacted on collaboration in the teams. I discuss the perceived benefit of passive facetime in collaboration – that team members were physically present so that other members could reach out to them when questions or issues came up. I discuss the accessibility and interruptions experienced in the team and the importance of physical proximity reported. I then explain how reduced passive facetime in the teams was reported to result in delays in response times, risk of miscommunications and risk of freewheeling (i.e. team members continuing with their work without the necessary input from other team members, resulting in suboptimal outcomes). However, the impact of reduced facetime was not the same across teams. In section 4.4 I present six sets of features that explain the differences in the impact of FWA use on collaboration within teams. Four pertain to the team-level and included team composition (i.e. skill distribution), task characteristics (i.e. task complexity and goal clarity), temporal characteristics (i.e. temporal stability and task urgency) and structural characteristics (i.e. regular face-to-face meetings, frequency of absence, predictability of absence and synchronisation of absence). One set of features pertains to individuals and refers to flexible workers' proactive behaviours (proactive availability and proactive responsibility). Finally, one set of features pertains to a broader environmental level, namely environmental characteristics, in particular the role the nestedness of the teams in national and organisational contextual layers plays in the study findings. Further information of the number of respondents and references behind each of the main themes and sub themes can be found in Appendix E. In section 4.5 I present a framework

outlining the impact of FWA use on collaboration and the role of the contextual features and in section 4.6 I summarise the chapter.

4.2 Contextual setting

The seven cases were nested within organisational as well as national settings, which need to be acknowledged in order to better understand their operation. They furthermore worked according to particular sets of work processes, frequently employed in software development. In this section I outline the national and organisational setting in which the seven teams operated as well as explain their work processes, which may explain some of the findings of the study. This will also be further discussed in section 4.4.6. on Environmental characteristics.

4.2.1 National context

The seven teams were operating within organisations located in The Netherlands and Belgium. The Netherlands has a population of around 17 million people and had an employment rate of 76% in 2017 (age group 15-64) (OECD, 2018). The country is characterised by an institutional framework of social dialogue which involves union federations, employer associations and the government, which extends to social and labor market legislation, the pension system and other policy issues with a general emphasis on economic equity. In recent years, the Dutch labour market has become highly flexible, characterised by a large share of FWAs as well as flexible labour contracts (Hartog and Salverda, 2018). Culturally, the country scores low on Hofstede's power distance cultural dimension reflecting an emphasis on equal rights and power decentralisation. It also reflects a culture where employees expect to be consulted, control is disliked, attitudes towards managers is informal and communication is participative and direct (Hofstede Insights, 2018b). In the Netherlands mothers are entitled to 6 week pregnancy leave (before childbirth) and 10 week maternity leave (after childbirth). Fathers are entitled to 2 days of paid leave and 3 days unpaid paternity leave after childbirth. However, parents with children up to 8 years old are entitled to unpaid parental leave that the employer must accommodate to (Netherlands Enterprise Agency, 2017). This

leave is paid in the public sector and in some private organisations, depending on the collective agreements, and has encouraged many men to work less than full time after having children (Gambles, Lewis and Rapoport, 2006). The Netherlands is also known to have a strong cultural tradition of part-time work, which has been argued to be a result of a spontaneous process caused by married women late entry in the labour force coupled with the absence of child care options and support, which has influenced public, union and organisational policies (Plantenga, 2002; Visser, 2002). In 2016, Eurostat reported that 49.7% of employees in The Netherlands worked part-time as opposed to an average of 19.5% in the rest of Europe (reported average of 28 countries) (Eurostat, 2017d). Furthermore, 26.2% of Dutch males were in part-time employment and 76.4% of Dutch females as opposed to an average of 8.9% of males across Europe and 31.9% of females (reported average of 28 countries in 2016) (Eurostat, 2017d). The Netherlands also has one of the highest proportions of teleworking in Europe, especially among knowledge workers and managers (Eurofound and the International Labour Office, 2017). Telework is more frequent among men than women in the Netherlands as in 2016 19.1% of Dutch men as opposed to 13.3% of Dutch women worked at least half a day per week outside the workplace (Hooftman *et al.*, 2017).

Belgium has a population of around 11 million and had a 63.3% employment rate in 2017 according to the OECD (age group 15-64) (OECD, 2018). Although the country suffers from lower-than-average employment rates it also has a lower level of labour market insecurity and higher level of earnings quality (OECD, 2017). In contrast to the Netherlands, Belgium scores high on Hofstede's power distance cultural dimension, reflecting a societal acceptance of inequalities and hierarchy. Attitudes towards managers are formal, control is expected and the information flow is hierarchical (Hofstede Insights, 2018a). In Belgium mothers are entitled to 6 week pregnancy leave (before childbirth) and 9 week maternity leave (after childbirth). Fathers are entitled to 10 days of paid leave which can be taken in one setting or spread out over time (Federale Overheidsdienst, Werkgelegenheid, Arbeid en Sociaal Overleg, 2012). In addition, parents have the right to parental leave of 4 months that the employer

must accommodate, which may be taken through moving to a part-time arrangement for a few months or years. The reduction in salary due to such an arrangement is compensated by the government (Federale Overheidsdienst, Werkgelegenheid, Arbeid en Sociaal Overleg, 2012). While Belgium does not have the same strong cultural tradition as the Netherlands in terms of part-time work, it is still one of the countries with the largest proportion of employees employed part-time in Europe (24.7% of those in employment in 2016) (Eurostat, 2017d). In Belgium 9.5% of males were reported to work part-time and 42.1% of females (Eurostat, 2017d). Belgium also has a high share of teleworking as in 2016 14,4% of employed women reported “sometimes” working from home and 16,4% of employed men. In comparison, the reported average in Europe (of 28 countries) of employees teleworking “sometimes” is 9.8% (10.3% of employed men and 9.3% of employed women) whereas in Belgium the proportion is 15.5% and in The Netherlands 21.2% (Eurostat, 2017a).

4.2.2 Organisational context

The three organisations were of similar size and shared similar cultural characteristics. Yet there were certain distinctions between them, especially in terms of acceptance of teleworking. An overview of the organisational setting is presented in Table 4-1.

4.2.2.1 Polaris

Polaris is a software development company located in Antwerp, Belgium and founded in 1995. At the time of the study around 100 people were employed at Polaris' head offices and an additional 40 worked in other locations. However, the bulk of that employee base was employed in sales or consulting. Polaris has a flagship product, which makes up the main revenue stream and most of the client base of the company, as well as a second product that was launched two years prior to the study and has a considerably smaller client base. Polaris had been voted one of the best employers in Belgium by a local business school for three consecutive years at the time of the study. Its management claimed that the primary reason for this is the company culture. Both employees and the

CTO reported that Polaris has a very open and collegial culture where everyone is perceived as accessible and people frequently engage in conversations and help each other regardless of level or position, and employees are given plenty of autonomy over their work. Observations at the offices of Polaris seemed to support these remarks since most managers worked with open doors or worked in open-plan offices and most walls were glass so people could see each other easily. The software development department was located on the upper floor of the head offices in Antwerp. It consisted of three development teams that worked in an open-plan office space, with team members in each team sitting either close to each other or at the same table. Two of these teams fitted the criteria for this study. Team Castor consisted of seven members of which two worked part-time and three teleworked regularly and team Navi consisted of six members of which one worked part-time and three teleworked regularly (see Appendix D for key characteristics of the cases).

Polaris has official flexible working policies, which allow employees to conduct their work between 07:30 and 18:00 and telework when they choose to. Polaris also has a clocking-in system requiring employees to clock in and out as they arrive and leave work. Due to the clocking-in system, hours worked after 18:00 are not counted as working time. However, in practice, the policy of working hours is not actively enforced and the CTO reported encouraging employees to work when they want and where they want, as long as they would be responsible and get their job done. Yet, interviews revealed that the need to clock-in and clock-out would influence the employees' use of flexible working hours as most reported that they found they had to adhere to it and finish their work before 18:00. Part-time work arrangements are negotiated on an individual basis in Polaris. Polaris provides all employees with laptops and software that enables people to work from outside the office.

4.2.2.2 Orion

Orion is a software development company located in Eindhoven, The Netherlands and was established in 1999. At the time of the study Orion employed around 55 people, the majority of whom were in software

development (40 employees). Orion engages in project-based work for external clients, with projects varying in length from a few weeks to several years. This has the consequence that developers are sometimes part of more than one project team at a time and multiple-team membership is not uncommon, although due to complaints from developers, management reported that multiple-team membership was kept to a minimum. Regardless of the project-based nature of the work, all developers work with their teams on-site at the company headquarters. At the time of the study, they worked in an open-plan office space on one floor, while the rest of the company (administration, sales, support) were located together on the floor above. Management and team members described the culture of Orion as very informal, open and relaxed, with little hierarchy and high levels of intellect and collegiality. Observations of the office space supported those comments as a Star Wars figurine was observed in a corner, a pinball machine and musical instruments were observed in the company lunch room and a group of employees organised poker games during lunch hours. Coffee breaks were also observed to be common where employees came together in the lunchroom. At the time of the research there were five major teams operating in Orion, with 6-7 different ongoing projects. Due to multiple-team membership of several members in some of the teams, only three teams fitted the criteria set forth for this study. Team Gemma consisted of six members, three of whom worked part-time and three teleworked occasionally, team Sirius consisted of five members three of whom worked part-time and one teleworked regularly, and team Media consisted of eight members three of whom worked part-time and three teleworked occasionally (see Appendix D for key characteristics of the cases).

Orion has formal flexible working policies that stipulate that employees can start their day between 8:00 and 9:30 in the morning and leave accordingly. They also stipulate that employees can work an hour less on one day and an hour more on another, as long as they work the right amount of hours in a week. There is no clocking in system at Orion and employees are trusted to keep track of their own working hours. In practice, Orion expects employees to arrive at work in time for a daily status meeting, which in most teams starts at 9:30 or

9:45 every day and lasts for 15-20 minutes. Orion emphasises that employees work face-to-face and it does not have a policy on telework. Regular teleworking (whole days) is only allowed in special circumstances, for example because of sickness or a long commute distance. Normal developers do not telework at all, except on very rare occasions to deal with business-related incidents. However, employees in management roles (software architects and project managers) reported occasionally working from home at night or during weekends. Part-time work arrangements are negotiated on an individual basis. Orion provides laptops and mobile phones to employees in management roles but not to developers.

4.2.2.3 Libra

Libra is a software development company located close to Breda, The Netherlands, and was established in 2001. At the time of the study, Libra had around 40 employees, 15 of whom belonged to the software development department. Libra has a flagship product, which constitutes the largest part of their revenue stream and client base. They also have a second product, with a much smaller client base, which had been launched six months prior to the study being conducted. At the time of the study, Libra's offices were located in two separate buildings close to each other and the development teams were located in one of those buildings but on two floors. Developers all worked in open-plan offices and teams were seated together – one team was on the upper floor and the two other teams on the lower floor. Management and team members described the culture of Libra as very open, informal, collegial and non-hierarchical. Observations supported these comments, as both the COO and CEO could frequently be seen walking around the office and appeared to be very collegial with the employees. The same kind of dynamics could be observed at lunchtime where everyone talked to and sat with everyone regardless of level or position. Libra has three development teams, two of which fitted the criteria for this study. Team Electra consisted of six members three of whom worked part-time and two teleworked occasionally. Team Propus consisted of nine members four of whom worked part-time and one teleworked regularly (see Appendix D for key characteristics of the cases).

Libra does not have formal flexible working policies and part-time arrangements are negotiated on an individual basis. There is no clocking in system at Libra and employees are trusted to keep track of their own working hours. In practice, it is accepted that employees start their workday between 7:30 and 9:30 as long as they arrive in time for their team’s daily status meeting which starts every day at 9:30 and lasts for 15-20 minutes. It is accepted that employees work an hour less on one day and compensate on another day but it is expected that this is communicated to the manager and the team. Libra encourages working face-to-face and only allows employees to telework due to special circumstances, e.g. to care for a sick family member. Occasional telework is accepted if for valid reasons, for example because of a sick child, but needs to be clearly communicated ahead of time to the manager and the team. Laptops and mobile phones are only provided to employees in high-level management roles.

Table 4-1 Organisational setting

Organisation	Polaris	Orion	Libra
<i>Location</i>	Belgium	Netherlands	Netherlands
<i>Total number of employees</i>	140	55	40
<i>In software development</i>	20	40	20
<i>Nature of business</i>	Own products	Project-based for clients	Own products
<i>Culture</i>	Open, informal, friendly	Open, informal, friendly	Open, informal, friendly
<i>Telework</i>	Accepted, mostly 1-2 days a week	Only in special circumstances	Only in special circumstances
<i>Flexible working hours</i>	Acceptable between 07:30 and 18:00	Acceptable between 08:00 and 18:00	Acceptable between 07:30 and 18:00
<i>Part-time work</i>	Negotiated on an individual basis	Negotiated on an individual basis	Negotiated on an individual basis

4.2.3 Work context: Software development

In all three organisations and in all seven teams, team members were engaged in a variety of tasks, including developing new features or new software and maintenance of old software (e.g. “bug fixing”). All teams worked according to the principles of agile software development, in particular “scrum” methodologies (Dybå and Dingsøy, 2008). When working according to scrum, software is developed in increments called sprints. Features to be developed

are registered in a backlog and at the beginning of a sprint a team lead of the team (“a product owner”) chooses the items that need to be developed, taking into account the needs of the business and the software. The team then starts the sprint with a planning meeting, in which the features the product owner has chosen and are to be developed, are discussed and split up into smaller parts if needed. They are then “groomed”, i.e. team members assign them numbers (in the teams studied from 1 to 5) according to their complexity and the time it takes to complete the task. During the sprint developers can pick items, which range from being relatively simple (in the teams studied here: a “1”) and they can work on alone, to complex (in the teams studied here: a “5”) and they need to work on in pairs. At the end of a sprint the team reviews what went well and what went wrong during the sprint in a retrospective meeting. During the sprint work is coordinated in daily 10-15 minute status meetings (“stand-up”), during which every team member presents what they are working on and what they plan to do that day. Furthermore, one of the team members has the role of scrum master, who is in charge of the coordination of the tasks (Dybå and Dingsøy, 2008). In Orion, the roles were slightly different to the traditional scrum team roles, outlined above. A project manager acted as a product owner and/or scrum master, setting the priorities for the team together with the client. In addition, teams had technical leads – software architects – in some cases two depending on the complexity of the project. Across organisations, teams generally worked in “sprints” when developing new features or when working on larger projects. If they were working on maintenance issues – fixing problems in existing software – they did not work in sprints, although in most cases they still had daily status meetings and/or weekly planning meetings to decide the work for the day/week and determine priorities. For full details of how the teams organised their work, refer to Appendix D.

4.2.4 Team demographics

The seven teams studied largely consisted of men (90%) whereas only three teams contained women – Castor in Polaris (1 woman), Navi in Polaris (1 woman) and Electra in Libra (2 women). A majority of the respondents were

between 30-39 years old (57%). 26% of respondents were between 20-29 years old and 17% 40 years old or older. Most respondents were in a relationship or married (78,5%) and 45% of them had children.

4.3 The relationship between FWA use and collaboration within teams

The purpose of the analysis of the cases was to develop an understanding of the impact of FWA use among team members on collaboration within teams. The focus was not on what collaboration consisted of, *per se*, although some understanding was necessary to enable me to determine the impact of FWA use. Rather, I sought to understand when and how collaboration was perceived to be affected, what explained it, and similarly if it was not affected, what explained the lack of impact. Hence patterns were compared across the teams to determine such explanatory features. Three types of FWAs were being used in the teams and most teams had a combination of all three types used among members. While differential effects from the three practices were anticipated, this was not the case, as similar consequences were noted from all three practices.

The teams studied contained a mix of part-time workers and teleworkers and all team members had some level of flexibility in determining their working hours (for details see Appendix D). All seven teams contained part-time workers, who would usually have a certain single day off during the week. This meant that the teams had to adjust work processes to the absence of part-time workers from the office on those days, by scheduling collaborative activities on other days and put questions or issues aside until the part-time worker was present. Four out of seven teams contained regular teleworkers, who worked away from the office for one or two days of the workweek (Castor (Polaris), Navi (Polaris), Sirius (Orion)) or during certain hours of the day (Propus (Libra)). Although teleworkers were still working on the days they teleworked, the teams adjusted work processes to their physical absence in a similar way to that of part-timers. As such, the teams would schedule collaborative activities such as meetings on

the days teleworkers were present in the office or expect them to come into the office on days when meetings were scheduled:

“Also it’s logic that you don’t work at home when there’s a meeting scheduled. So for the meetings, like Mondays, Monday morning and Thursday afternoon, we are always here in the office.” (Christian, Castor (Polaris))

Team members also reported minimising the extent to which collaboration was needed on the days teleworkers worked away from the office, for example by asking questions before or waiting to ask them until the teleworker was present at the office again (see section 4.3.2.1 for more discussion). This was particularly interesting as, in contrast to working with absent part-time workers, team members, in theory, maintained the option of reaching out to teleworkers if needed through e-mails, messengers or telephone as they were working and did not have a day off. Nevertheless, communicating with absent teleworkers through these methods was perceived to have significant limitations and this was therefore reported to be kept to a minimum (4.3.2 for further discussion) as reflected by this quote in which a member of management in Orion explains the difference between how part-time work and telework is experienced in the teams:

“And they really know, like okay, I shouldn’t ask this guy anything on Tuesdays and if I need to know something on Monday afternoon, I have to ask now otherwise I’ll only know it on Wednesday. Well, if you’re working from home you’re actually supposed to be available and interacting with the team. But still, people kind of get to see that as “Okay, he’s not here on Tuesdays and on Thursdays because he’s working from home” and then it kind of gets like a day where you’re not available. Maybe because so many people have one day where they are not available at all, and then if you work from home, it feels the same I think to the developers. And then you get like a day where you’re not interacting at all, when you are only doing your own stuff...” (Friso, Management, Orion).

Flexible working hours were used moderately in all three organisations since all organisations enforced a period of core hours, which meant that team members needed to work during certain hours, such as between 08:00 and 18:00. In fact, enforcing a period of core hours was openly argued to be a tool to minimise issues as a result of absence in the three organisations, since core hours would

effectively synchronise the facetime of team members at the office: “so that we have a significant timeframe when everyone is in the office” (Jasper, Management, Orion). However, not all members agreed with this policy, especially in Polaris which maintained a strict clocking-in and clocking-out policy in addition to core hours as the team leader of Navi explains:

“We actually hate it because what happens, people when they come in, in the morning they have to, yeah, you have a badge and you have to clock in and clock out of course. And then our people are really looking because they have a system where they can check how many hours they’ve been here. And people are actually doing that and I’m like, no way, I don’t want that. I mean this needs to be done and if you’re working this week 35 hours and next week it’s 40, I mean I just want to get it done. And if there’s like an extra effort needed I expect you to do it.” (Gwen, Navi (Polaris))

Yet, because of policies of core hours in all organisations there was significant temporal overlap between team members and therefore the impact of flexible working hours on collaboration within the teams was reported to be minimal.

In summary, cross-case analysis of the seven teams revealed that, when examined at the team-level, part-time work and telework had a similar impact on collaboration. Although teleworkers were working, most often from their home, they were still often regarded as out of reach, in a similar way to part-time workers. This reflects a high value put on passive facetime. I will discuss the perceived value of passive facetime next.

4.3.1 The value of “passive” facetime

The primary benefit of team members working in the office was reported to be the fact that it provided opportunities to interact face-to-face with fellow team members, as described by a team member in Gemma:

“We try to have everybody here at the same time, because it helps open issues; you discuss. And I’ve found that is, at least in our company, it’s the nicest way to work, people are just around, you can approach them, you ask questions and join up behind your computer.” (Koen, Gemma (Orion))

This quote highlights that the reported value was primarily derived from team members' passive facetime – observing team members' physical presence in the office (e.g. sitting at their desk) – and experiencing having the opportunities to reach out to them if needed, without this necessarily being the case. Passive facetime of team members was therefore experienced as availability and accessibility to other team members (see Appendix E for number of respondents and references discussing passive facetime). As such, they could reach out when issues or questions arose and engage in face-to-face conversations, explain their work to others in order to help them understand it better themselves, learn from others and even listen in:

“Sometimes I pick up on issues just by listening in to the conversations. So sometimes when I hear my colleague and a developer talking, I, from listening in, can understand that they're missing part of the information that is needed for them to solve it. And then I can just butt in basically and tell them, “Hey, have you thought about that and that?”” (Ank, Castor (Polaris))

Passive facetime at the office also facilitated face-to-face interactions, the benefits of which were reported in all the teams. These included clear responses, quick reaction times and ease of interpretation as team members could visibly see each other and interpret body language, intonation and expressions in addition to the words spoken:

“When you are talking to someone you can read his face or her face and discover what they mean, what they actually mean. And if you see a frown for example you can just take it into account and just dig a little deeper to get to the real meaning of your discussion.” (Jelle, Management, Orion)

Being able to interact face-to-face was therefore perceived as allowing for smoother collaboration in the team as well as enabling and improving knowledge and information sharing. Although the need to collaborate in general varied between the teams, all teams had regular meetings to coordinate tasks. However, outside of those meetings, collaboration within the teams was reported to be *ad hoc* and informal, as team members engaged in collaboration through walking up to each other and discussing issues as they arose, as explained by a member of management in Orion:

“What we do find important is that people walk to the other guy and discuss face-to-face so that you finish the discussion, make sure that you are ... understood. And if you use email or a chat, it’s too easy, well, I’ll just send him a message and I’ll do something else. And that’s less responsibility. We really want to try to avoid that.” (Jan-Willem, Management, Orion)

Only one team, Castor (Polaris), had adopted formal methods of collaboration outside meetings. These were so-called pair-programming methods, which were implemented to facilitate knowledge sharing in the team and improve the understanding, knowledge and quality of the code. They involved two developers sitting next to each other and while one programmed the other one observed and commented. Several team members of Castor reported that by establishing such a formal mechanism of collaboration a shared responsibility, understanding and ownership of the code and the product was established, with the result being a higher quality end product and better distribution of knowledge within the team.

Another benefit of passive facetime of the team at the office was reported to be that it enabled the creation of collegial bonds within the team as well as with other members of the organisation:

“It can become lonely if you are always working at home. You still have the personal interaction with someone then which is not always part of the job, not part of your work I mean. I have interactions with other people when I get a coffee or something like that, otherwise I would be getting very lonely if I would be working four days out of five at home.” (Christian, Castor (Polaris)).

Presence at the office was therefore found to provide opportunities to engage in friendly *ad hoc* small talk and get to know each other at a personal level.

4.3.1.1 Accessibility and interruptions

A relative ease could be observed in most of the teams studied in terms of reaching out to each other when passively present at the office. Researcher observations confirmed interview commentary describing cultural norms in the organisations, which included accessibility, so that walking up to someone and asking for advice was seen as normal behaviour. However, it was reported to be accepted that a team member would ask another team member to come

back later, for example if s/he was busy with a task when interrupted and did not wish to be interrupted. In some instances team members reported concerns when it came to asking for advice:

“...sometimes it's frustrating, more for the more experienced persons who get asked a lot, it's sometimes a little bit frustrating. We need to keep in mind that we don't disturb people too much. It's always a struggle, you know. I need to go on with my story but I need his help. Am I disturbing him too much? It's always a struggle.” (Ben, Propus (Libra)).

In some teams (e.g. Castor (Polaris) and Navi (Polaris)) teleworking was seen as a way to be able to focus, avoid the interruptions of the office and work on tasks that were individual in nature and did not require collaborating with others. However, this varied between individuals, with some reporting more need for working without interruptions than others:

“They're good [referring to messengers]. I mean they're technically good. But I think we should use it for when it's needed, I mean my Lync is mostly disabled. So if the others need to ask something urgent they just send me a mail. Then I put Lync on, because otherwise there is no difference any more between working at home and working at the office. It can disturb you at any moment.” (Dennis, Navi (Polaris)).

In teams which did not allow for telework, such as Media (Orion), members reported using noise cancellation headphones to enable concentration when working in an open-floor space and to signal their unavailability to others at a given moment in time. The benefit of being able to focus versus the need of others to collaborate therefore created a delicate balance, especially for some individuals.

In both teams in Libra (Electra and Propus) a conscious decision had been made to remove all desk phones from developers to minimise interruptions. They were reported to have been used extensively by the service centre in the organisation in the past, to reach developers when issues came up that service centre employees could not resolve. Similar struggles with disturbances from employees servicing the software were reported in other teams, such as Navi (Polaris) and Media (Orion), which reported setting up methods to minimise

disturbances, for example by having all issues going through the product manager. It seems that disturbances from servicing the software were experienced as more severe than disturbances from fellow team members needing assistance or consultation.

4.3.1.2 Proximity

Furthermore, several teams also reported physical proximity to co-workers as an enabler to collaboration in the team. This was especially the case in Gemma (Orion), Media (Orion), Sirius (Orion), Electra (Libra) and Propus (Libra), but both Orion and Libra were organisations that highly valued facetime. In these teams the actual physical sitting of team members in the office space such as sitting next to or close to your team members, was perceived to increase knowledge sharing and benefit the team, as reflected by a respondent in Libra describing moving between floors to be closer to the new team:

“So when we sit together, sometimes when a discussion comes up, it's really nice when you're there and you can overhear it, so you can know that's going on. So you're really focused into the project actually. Yeah, it wasn't mandatory... I didn't have to move downstairs, but I chose to.” (Daniel, Propus (Libra)).

Reflecting the value put on physical proximity, availability of other team members was reported to be determined by visually looking at whether they were present at their desks or whether they were engaged in conversations with others or not. As a consequence, when team members of the same team were sitting further away from each other, e.g. at opposite ends of the office space or on separate desk islands, a sense of distance or separation was reported to be created:

“Because of the work that we do, when it requires interaction it's just so much more efficient to have someone there. It's also important to have a low barrier, even two desks away ... it's a small distance, it's still a bigger barrier than someone you can reach by just shouting to them because they are one desk away... You have to stand up, walk over, it's already a bigger barrier then.” (Ronald, Gemma (Orion))

This value of close proximity to enable *ad hoc* collaboration was also reflected in comments made by individual members describing difficulties when needing

to collaborate with colleagues physically located on a different floor because of the threshold of “the big staircase” (Remi, Electra (Libra)):

“If you have teams working together and some of the people are sitting on the fifth floor and others on the fourth floor, I don’t know why, but it creates a mental barrier with those people, it’s as if they don’t exist in each other’s existence until they actually see each other. So if you can see them, if you can hear them, it’s no problem. But if they are on another floor it’s a really ... it’s a strange thing I think but people don’t acknowledge each other any more.” (Jelle, Management, Orion)

Members of Propus (Libra) and Sirius (Orion) reported a similar threshold when communicating with teleworkers on days when they teleworked. This was especially the case in Sirius (Orion), where making contact with a physically absent teleworker was experienced as difficult and picking up the phone was perceived as “a threshold”. The question to be asked had to be absolutely clear before effort was made to contact the absent teleworker:

“I have quite a step before I go to Dirk if he’s at home because he usually doesn’t answer his phone right away or he’s at a meeting. And it’s always harder to explain your problem over the phone in my opinion, because you cannot share your code as fast as you can when you’re with someone. So yeah, I find it quite difficult.” (Dennis, Sirius (Orion))

In Propus (Libra), team members avoided making contact with the absent teleworker and rather dealt with issues or asked questions when the teleworker was back in the office. One team member even described the teleworking team member as simply being “out of the team” (Ruud, Propus) when working from home. This sense of distance created in the teams by not physically seeing each other, within the office space or when working away from it, would also carry a greater risk:

“...because there’s a larger threshold to go to someone, you don’t see them as often. So you get used to the fact that you don’t. And if you’re used to it, well, the effort becomes even larger because you don’t want to... “ (Jelle, Management, Orion)

That collaboration was enabled by working in close proximity also seemed to create a form of social control in the teams. This was reflected by comments

that team members would notice when other team members arrived and when they would leave and therefore be aware of their hours of work at the office (e.g. Electra (Libra), Media (Orion)). This was reported to have significant consequences on how comfortable team members felt working flexible hours, since both fellow team members and management were not necessarily aware of the times people arrived at work, especially if they had arrived early and could therefore leave early, resulting in feeling the need to “say a quiet goodbye” (Tom, Media (Orion)). In many teams, team members reported that if they were to arrive late their team members would make comments, in most cases jokingly, by asking if they overslept or whether they were stuck in a traffic jam.

In summary, the the primary benefit of facetime was passive facetime – having the opportunities to interact face-to-face with each other because of team members’ passive facetime at the office. This provided opportunities to share knowledge, learn from each other and build collegial bonds. Passive facetime of team members was experienced as availability and although sometimes resulting in interruptions, any interruptions from outside the team were regarded more negatively. The value of passive facetime was further underscored by the reported benefits of physical proximity between team members at the office as an important enabler of team collaboration. This would also create a social control in the team as team members observed each other’s start and end time of work.

4.3.2 The impact of reduced facetime on collaboration in teams

Reduced facetime was reported to have the effect that communication between team members on days when team members worked flexibly either happened through other methods than face-to-face, such as telephone, e-mail or chats (when working with teleworkers) or was reduced to the extent that it did not happen at all (when working with part-time workers and in some cases with teleworkers). While all the teams studied had access to various types of electronic communication methods, a consensus was observed across teams that these could not replace or supplement face-to-face interactions. Rather,

communication tools were experienced as resources to enable communication between team members for certain purposes only. As such, messengers were used in Navi (Polaris), Electra (Libra) and Propus (Libra) for quick questions and to check whether co-workers were available for a face-to-face chat, especially if they were sitting further away from each other. Emails served a similar purpose in Gemma (Orion), Media (Orion) and Sirius (Orion), since they did not have a messenger in use:

“If I have a problem, it’s hard to explain a problem in one email and get confirmation that every step is correct. And you want to have follow-up questions more quickly when you have a problem, instead of a single question.” (Dennis, Sirius (Orion)).

Only Castor (Polaris) had developed a culture of extensive messenger use characterised by team members commonly communicating with each other through chats even if they were sitting side by side. Interestingly, in Castor the messenger was, to some extent, used to limit the interruptions that result from passive facetime. An illustration of this is that Castor members had made agreements to first address questions to each other in the messenger rather than face-to-face so that other people could work without interruption as otherwise every five minutes someone would be asking a question. They could only ask the question face-to-face if they hadn’t received a response in about 15 minutes, although this rule was reported to be not always upheld. The extensive use of messenger in Castor also translated to part-time members feeling the need to catch up on chat history as they returned to work. It also raised worries within the team related to the storing of information and knowledge in chats as chat history would not be saved for more than 30 days and valuable information would therefore be lost. In general, messengers or emails were usually a first choice in all teams when contacting absent workers. Contacting each other by telephone, however, was mostly reported to happen as a last resort and for urgent matters only.

Cross-case analysis of the teams revealed that FWA use and the reduced facetime at the office, resulted in delays in response times, risk of

miscommunications and risk of freewheeling (see Table 4-2). These will be discussed next.

Table 4-2 Importance of facetime: Case findings

Organisation	Polaris		Libra		Orion		
Team	Navi	Castor	Electra	Propus	Gemma	Sirius	Media
<i>Perceived importance of facetime (low, moderate, high)</i>	Low	Moderate	High	High	High	High	High
<i>Explained by:</i>	Little need for interactions as a result of long team tenure and established roles	Wide-spread use of messenger to communicate in the team	Strong belief in benefits of face-to-face communication	Strong belief in benefits of face-to-face communication	Strong belief in benefits of face-to-face communication	Strong belief in benefits of face-to-face communication	Strong belief in benefits of face-to-face communication
<i>Perceived effect of reduced facetime:</i>							
<i>Team experienced delays</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Team experienced miscommunication</i>	Yes	Yes	Yes	No	No	Yes	Yes
<i>Team experienced freewheeling</i>	Yes	Yes	Yes	No	No	Yes	Yes

4.3.2.1 Delays in response times

All teams reported delays in response times as a consequence of individual FWA use, regardless of how accustomed the teams were to FWA use. Teams experienced delays when team members reported having to wait for input from a physically absent flexible worker:

“It’s one day that you don’t see each other... the question which would have been asked immediately won’t be asked and has to wait for the day after [referring to teleworking]. So I know it’s a bad thing.” (Piet, Navi (Polaris))

The experience of having to wait for answers would be greater when working with part-timers since team members would rarely get in touch with them out of respect for their day off and if they did (due to urgent matters) the part-time

workers did not necessarily answer the phone or pick up the message. Yet, teams containing teleworkers experienced similar dynamics. In some cases, team members reported hesitation to make contact with teleworking co-workers (Sirius (Orion), Propus (Libra), Navi (Polaris)), although this would also depend upon how well that particular team member was acquainted with the teleworker. In other cases, teleworkers were reported to not necessarily pick up the phone immediately nor answer messages or emails, so those trying to reach them were forced to put things aside anyway, park their work and attend to other tasks or issues. The result was therefore that the necessary interaction either did not happen at all or was delayed, slowing down work progress, as noted by a member of Castor (Polaris):

“It slows the whole thing down for me, yeah, absolutely. So if I ask a question on Slack and no one’s answering because they’re not at their computer, they’re talking with each other somewhere else I lose time waiting. And the whole system is always slowed down by bottlenecks like that.” (Michel, Castor (Polaris))

However, the experience of delays was reciprocal in many teams (Castor (Polaris), Propus (Libra)) because teleworkers also experienced delayed response times from those working at the office and reported that they would not respond as quickly as they would when face-to-face: “because they don’t see the message or they are busy with other things” (Robert, Propus (Libra)). An interesting side effect of this problem, observed in Sirius (Orion) and Propus (Libra), was that the absence of a part-time worker or teleworker from the office had the effect that other team members were forced to try harder to figure things out and solve issues themselves instead of addressing questions to others without real contemplation. A member of Propus explained this:

“If someone you have to ask a question to was unavailable, even if they’re in the same building, but somewhere else, or taking a break or something, you start looking again. And so maybe I can fix it again if I look really hard, because I have to wait anyway, you can look at that, so that takes ... sometimes it takes the urgency of a question away. And you don’t have to ask it.” (Peter, Propus (Libra))

In other cases, team members would direct their questions to other senior members of the team instead, such as in Media (Orion) where the team lead worked part-time and was absent one day a week.

4.3.2.2 Risk of miscommunications

The increased reliance on electronic methods invited a risk of miscommunications and misunderstandings arising in the teams. This was particularly the case when working with teleworkers. Concerns were raised in teams such as Castor (Polaris), which relied heavily on messengers, due to the lack of depth and context inherent in communicating electronically and how this would limit the usefulness of the conversation and lead to a risk of things getting lost in translation:

“And you should more think about the words you’re typing because whatever you’re typing you have to think about the reader and how he’s going to interpret whatever has been written. Not only during the conversation but in 10 days if someone reads it again will he understand what I meant and not what is written? There’s all these extra brain cycles you have to put into communicating because if I say something to you, and you say, “Really.” I can quickly explain, “No, what I meant is x, but I’m not sure how to formulate it.”” (Michel, Castor (Polaris))

In several teams, team members emphasised how difficult reduced facetime was when collaborating on complicated matters or asking complicated questions. For example, because Sirius (Orion) worked on a complicated product, some team members found it difficult to collaborate in other ways than face-to-face because even telephone calls provided insufficient richness of communication. They reported a need to show and share what they would be having trouble with and explain it to the other person “to make him understand exactly what you are saying” (Xander, Sirius (Orion)). A member of management of Orion explained the challenges to team collaboration associated with the complexity of the project in Sirius and the team’s reduced opportunities to interact face-to-face:

“So what we try to do is motivate everyone as well as possible, that the (teleworking) developer’s only a phone call away. And that has helped, but still it’s

easier when someone sits next to you, looks at your code, helps you with it, you do a little brainstorm and then you can continue.” (Jasper, Management, Orion)

Sirius had started to do some screen sharing in order to address these issues, which helped, but was still not seen to be able to replace addressing issues face-to-face.

4.3.2.3 Risk of freewheeling

In several teams reduced facetime was reported to carry a risk of “freewheeling”. Freewheeling referred to that those working on their own, without access to input from their team members, tended to get stuck in their own vision and create code that would either not be up to standard or not exactly what was needed. The risk would therefore be that teams would be faced with difficulties because team members working without the necessary input would take things too far before they realised that there was a problem or what they had been working on was not needed. This was reported to be an issue both in teams with part-time workers as well teleworkers and was especially found to be an issue when dealing with complicated tasks or complicated code. In such contexts there was a high value put on being able to discuss issues face-to-face in the team in order to clarify assumptions and avoid steering off in the wrong direction:

“I think the biggest challenge is the communication. So for example if I decide to work four days a week at home, yeah, I don’t see any colleagues any more. Yeah, and people start to do their own thing. I mean for the task and I don’t know if that will be the best solution.” (Dennis, Navi (Polaris))

Again, this was not only an issue with team members working away from the office but equally with those team members normally working at the office since they would sometimes require input from an absent worker, e.g. from a part-time worker who was off on a particular day. Media (Orion) had experienced that due to lack of information or input from an absent part-time worker, which was also the team lead and therefore had authority in the team, other team members would sometimes steer off in the wrong direction. The team lead reported that he felt the need to go through the work that had been done in his

absence to be up to speed again. He felt he needed to estimate the consequences of the choices team members made in his absence and whether corrective action would be needed:

“I find that if I don’t do my round before I go home on Tuesday that when I come back on Thursday, they all went their own ways. And it’s not always the right way.”

(Rob, Media (Orion))

Electra (Libra) had also experienced the consequences of freewheeling, as a few years back a team member was allowed to telework and work flexible hours but took it to the extreme by mainly working nights and rarely being seen at the office. He had taken on complicated tasks but due to his lack of presence at the office his work would be: “sometimes it was right, sometimes it was wrong” (Erwin, Electra (Libra)). Even in Navi (Polaris), which was a team characterised by members with long tenures and extensive experience, a team member explained that the tradition that had developed in the team, where the same person worked on the same part of the software, created an inferior quality of software. He reported that in order to create a better and more homogeneous end product, it was more valuable for different team members to work on and develop an understanding of the different parts of the software.

In summary, delays in response times, risk of miscommunications and freewheeling associated with FWA use reflected the reduced passive facetime of team members and increased reliance on electronic methods of communication. They were reported to result in slowing progress down in the team as more time would be needed to finish the tasks at hand. In addition, part-timers, because they work fewer hours in a week, could produce less than their co-workers, which further slowed down team progress. However, there was a general understanding across teams that part-time work was manageable since it was possible to establish the velocity of the team – the amount of work they could accomplish in a given time period – and the capacity of part-timers would be accounted for as a part of that. Therefore, it would simply take longer to finish up in the team but this would be known ahead of time and could be planned for and averaged in.

However, not all the teams were affected in the same way by the use of FWAs in the team. In some of the teams examined, FWA use was negatively perceived and was reported to have a negative effect on collaboration while in other teams it seemed to have no effect. These inconsistencies across teams suggest that there may be other aspects that come into play that determine the impact of FWA use on collaboration and the value put on physical facetime. In fact, cross-team analysis revealed that some teams had certain features in common, which seemed to play a role in determining the impact of FWAs. I will turn to discussing these explanatory contextual features next.

4.4 Contextual features

Cross-case analysis showed that some teams faced greater difficulties in adapting to the reduced passive facetime of its members. Six sets of features were identified to influence the relationship between reduced facetime in teams and team collaboration. These pertained to three levels; on the one hand were team-level features – team composition, task, temporal and structural characteristics. At the individual level were individual proactive behaviours. On the broader environmental level were environmental features, in which the teams were nested. In the following sections each will be discussed in detail and Appendix E shows the numbers of respondents and references behind each feature.

4.4.1 Team composition

One of the features that were found to determine the extent to which team collaboration was affected by reduced passive facetime was the composition of the team. In particular, the level of skill differentiation (Hollenbeck, Beersma and Schouten, 2012) was found to impact on the relationship between FWA use and collaboration.

4.4.1.1 Skill differentiation

Several teams reported difficulties because of high levels of skill differentiation in the team, meaning that some members had more specialised knowledge or capacities than other members and could not easily be replaced. Sirius (Orion)

was particularly challenged due to high levels of skill differentiation in the team as one team member had, by far, the greatest knowledge of the project. The same member was also a part-time worker who worked only four days a week, two of which he teleworked. This meant that he was only present at the office for two days a week. His fellow team members were all fairly new to the project and had little knowledge of the code and therefore had to rely heavily on his expertise and knowledge. The result was that during those two days that he was present at the office, his three team members had many questions and things to discuss:

“So you see when Dick is here, he has got people circling him like hungry sharks – three little hungry sharks are circling around him trying to get information out of him.” (Dennis, Sirius (Orion))

This team member was reachable during the two days he teleworked and reported that he encouraged his team members to pick up the phone for the quickest possible feedback and response time. Yet, the members reported that reaching out to him through telephone or other methods did not compare to consulting with him face-to-face. They tended to either try to consult with each other and try to figure things out themselves or wait with their questions until he was present. One team member explained how the situation was affecting the team:

“Well, quite a lot I think, especially since Dick is the person that knows everything about the system. And well, he’s not available on two days and only here on two days. So that’s hard if you have questions and things like that, you cannot really talk to him very often. And I find that difficult. So maybe in a year or so if we all know everything about the project then that’s no longer a problem. We can just do our separate issues. But now for questions and stuff, we have to just try to find it out for ourselves and hope that he responds to an email, so yeah, that’s difficult.” (Xander, Sirius (Orion))

However, one of Sirius’ team members was more comfortable than the others in reaching out to the teleworking member, possibly because he had been working with him for longer. This team member was also reported to be readily available to help the other members if needed and share the knowledge he had been

able to build up. Another team, Propus (Libra), had a team member with significant knowledge and experience that teleworked. While the team contained several other experienced members, making the absence of the teleworker less problematic than in Sirius, his knowledge and experience was still missed as one of his team members explained:

“That is a different story because Robert has a lot of knowledge so it would be a waste to have him do all the simple work. The situation at the moment with Robert is not ideal. I prefer to see him in all the time again because of his seniority and experience.” (Jorgen, Propus (Libra))

Several other teams contained junior developers that had recently joined the organisation and still had a lot to learn. In these teams, in particular Electra (Libra), Propus (Libra) and Castor (Polaris), significant time of the senior developers was reported to be spent mentoring, teaching and training the junior developers about the product and the code behind it. This was accepted as a part of the work that needed to be done and dealt with in the teams but was reported to take time and slow the team down. As an example, a joint decision had been taken in Castor not to on-board new members for a while because they had already had so many new members and needed to determine how to work together and distribute the knowledge of the product in the team before on-boarding any more new members. Not being present or available to guide junior developers was seen in Gemma (Orion) as problematic, since Gemma contained a senior developer (architect) who worked four days a week instead of five:

“Especially when they are new here, it can be very, very demotivating to not be able to have time to speak to the architect. Because you don't know what to do, and you start meddling around, and it doesn't really work, and then he comes back, and says “What have you done? It sucks”. You know, you need to find time.” (Koen, Gemma (Orion))

The teams studied here showed that the level of skill differentiation in the teams, in particular teams containing junior developers that still had much to learn, produced an increased need to interact, collaborate and consult with other team members. In teams with high levels of skill differentiation, less

knowledgeable members reported feeling uncomfortable reaching out to more knowledgeable teleworking members because they did not know them well or they felt that the media of communication (e-mail, chat or telephone) did not provide the richness needed to address the problems with which they required assistance. Therefore, teleworkers and part-time workers were experienced in a similar way in the team as a result of their absence from the office. While teams reported working on addressing skill differentiation problems, such as in Castor (Polaris) (implementing pair-programming methods) and Sirius (Orion) (asking the experienced developer to come in more often at crucial times in the project), most were in need to on-board even more new members. This suggests that skill differentiation problems were likely to ensue and better knowledge management within the team may help them to deal with these issues in the long-term.

In summary, high levels of skill differentiation were experienced as problematic in the teams, especially when a highly skilled member was not available to guide other members because of telework or part-time work. This was particularly the case in teams containing many inexperienced junior developers. As a result I propose that in teams with high levels of skill differentiation, the effect of FWA use on collaboration is more negative.

4.4.2 Task characteristics

Software development teams generally work on different types of tasks, which all involve coding. The teams studied here were all developing or maintaining a software product for the organisation itself or external clients. At the time of the study some teams were in the maintenance phase (e.g. Sirius and Electra) and others were working on something completely new (e.g. Propus). However, most of the teams normally had a variety of tasks, so weeks or days could be very different depending on the task at hand. Two features emerged as impacting on the extent to which FWA use affected collaboration within the teams. These were complexity of the task and the clarity of goals.

4.4.2.1 Task complexity

There was cross-team consensus that the nature of the work teams were involved with at a given point in time had a considerable impact on the need to collaborate with each other. Certain maintenance tasks were reported to be more individual in nature and required little collaboration between team members. However, larger and more complex tasks, such as developing new features or projects, were reported to require considerably more collaboration between team members. Since different tasks required different levels of collaboration between team members the impact of reduced passive facetime on collaboration was perceived to vary accordingly. In several teams certain tasks, such as low complexity tasks, were reported as requiring little interaction between team members and could therefore be worked on individually without input from other members. Yet, such work would need to be reviewed afterwards to prevent the effects of freewheeling:

“Well, then we get to the stories with low complexity. That’s something that could be done from a different location without face-to-face communication because they are fairly straightforward. But we also need to take care that not just one person is doing those stories because they tend to drift away from the central thing that is being created.” (Jorgen, Propus (Libra))

The team lead of Electra (Libra) also voiced the opinion that the status of the project at hand played a role, because when a project was well documented, fewer questions would arise and the need for collaboration would therefore be less. However, in teams dealing with projects that were not well documented or not of good quality, more collaboration would be needed in order to establish understanding of the project in question, and due to the complexity involved this was reported to be better done face-to-face with other members (e.g. in Sirius (Orion)). Several other benefits were reported from working on more complex tasks face-to-face with team members, for example because it could be difficult to divide complex tasks into small enough chunks that could be worked on alone. Developers also explained how beneficial it was to be able to confirm and consult *ad hoc* with team members that assumptions made were correct or seek advice by asking questions informally face-to-face. Consulting with others

was also reported to relieve the exhaustion they would experience by focusing on complicated code on their own without a pause or anyone taking over:

“... When you are alone you are looking at something very difficult, you easily get side-tracked. You keep concentrating on the same thing without some kind of relief or some pause, when there is someone beside you, he can take over when you are too exhausted. So sometimes it’s easier to work with more people I think.”
(Jonathan, Castor (Polaris))

Therefore, in teams containing teleworkers (Castor (Polaris), Navi (Polaris), Propus (Libra), Sirius (Orion)), teleworking members reported that they would take care to plan their days of absence by structuring tasks so that they could be worked on alone. In Castor (Polaris), telework was even reported to have led to a more efficient division of tasks in the team and better analysis of features being worked on upfront, because of the need to be able to work on them away from the office:

“Well, sometimes, for example if we work from home then we try to organise our work the day before so it is possible to do something from home. Or if we are both doing a feature we can say, “Okay, I am going to work from home, and I’m going to do this track and you’re going to do that track.” But yeah, that’s something you have to take in account.” (Thomas, Castor (Polaris))

In summary, complex tasks were experienced as requiring more face-to-face interactions due to the necessary exchange of complex information and knowledge. FWA use also resulted in a better structuring of tasks to enable individuals to work on individual tasks from home. As a result I propose that high levels of task complexity amplify the impact of FWA use on collaboration.

4.4.2.2 Goal clarity

Another task characteristic perceived to assist teams in adapting to reduced facetime was clarity of goals – that team members would understand the purpose and long-term goal of what they were working towards:

“But I think I would eventually prefer working towards a goal because it makes me feel like I’m part of a team, a team of people working towards something. If you work towards something and you get to the end point then it’s quite satisfying. And

now the weight of the word lonely is a bit high, but I'm working in quite a lonely way. And we're all working on small, little islands." (Dennis, Sirius (Orion)).

By providing the team with an understanding of the bigger picture, teams reported that this would possibly translate to a better product. This was most clearly observable in two teams, Sirius (Orion) and Castor (Polaris), which were both dealing with a lack of direction that was reported to impact on the success of the team. In Sirius, the most knowledgeable developer worked four days and only two of those at the office and the architect worked four days and had little time for the project. The rest of the team felt a bit lost at times and missed having a better structure and a clear direction so that the quality of the work would be as good as it should be:

"We really miss ... ownership over the project and someone who really pushes people to create code that is good, high quality. And to have a clear view of where we should go and what things should look like. And so I think we need a type like Dick who's there, who really tries to improve the project from the backend, from the code." (Dennis, Sirius (Orion))

In Castor (Polaris), the team lead (product owner) had been away on sick leave for several weeks. Since he had been away the team had been working more directly with the consultant side of the organisation in order to determine priorities for the team, which was reported to help them better understand the needs of their clients. However, this had also led to them experiencing that a long-term goal was missing, a vision of where they should be going, rather than just reacting short-term on client issues:

"We are only working on things for clients that aren't in the product. So we're doing things to make the clients happy but we can never make them happy if we don't work on the big things. So I think the team is trying to be very performing but they have legacy in the code and legacy... that the strategic things aren't that good or clear." (Carl, CTO, Polaris)

Several other teams mentioned how they value knowing where they are going and having a complete overview of what is happening and what the purpose is. This was reflected in a comment by a team member in Navi (Polaris) who felt that people were working too much on their own things without really knowing

each other. He missed having a complete overview and goal for the future (Jan, Navi (Polaris)).

Another aspect of providing teams with a clear direction was identified to be the value of letting people follow through and finish their projects before moving them to another project. Both Propus (Libra) and Electra (Libra) experienced challenges in being able to follow through with their projects and finish them, rather than being constantly made to move on to something new by management, which appeared to be a tendency in the organisation. This was described as “swimming in an endless stream of water” (Remi, Electra (Libra)). Team members reported value being placed on being able to focus on one thing at a time, finish it and do it well:

“To be a bit more insistent in the direction or whatever, like to define something and to stick to it for a while, and then evaluate. Like now we tend to on a daily basis to choose priorities... maybe you need to choose your priorities every two weeks. And get something finished in these two weeks (laughter).” (Daniel, Propus (Libra))

Gemma (Orion) had also dealt with a similar issue, albeit from a different perspective. Due to some team members having had to work with different clients in several teams at the same time, they had experienced how a focused team with few distractions, a clear direction and clear specifications was an important success factor of a project.

In summary, team members reported that clarity of goals enabled them to know what had to be done and made difficulties as a result of reduced passive facetime less prominent and easier to manage. As a result I propose that goal clarity mitigates the impact of FWAs on collaboration.

4.4.3 Temporal characteristics

The impact of FWA use on collaboration may change over time as teams learn to work together. In addition, at certain stages of a project, facetime may be perceived as more important. Two temporal characteristics emerged from the data: temporal stability and task urgency.

4.4.3.1 Temporal stability

Temporal stability refers to the degree to which team members have worked together in the past and whether they expect to work together in the future (Hollenbeck, Beersma and Schouten, 2012). Three of the seven teams had members who had worked together for a considerable length of time. Navi (Polaris), for example, was composed of individuals, the majority of whom had worked for the organisation for more than ten years. Team members therefore knew each other well and each member had developed their own levels of expertise with the team. As a result, they reported that the need to consult with each other was less and both part-time work and telework were experienced as having little effect on the team. In Propus (Libra), several team members had also worked together for a long time, which was experienced as mitigating difficulties due to the absence of a teleworking team member, as other team members understood his reasons for teleworking, supported him and would therefore step up to take his place:

“We just ask, “Are you in tomorrow?” Okay, we can discuss it tomorrow, it's no problem. And if we really want to know stuff, chat is okay. For me it's okay because with Robert, or Ben or Daniel, I have worked with them like eight years... you just know, okay, he really means that.” (Finn, Propus (Libra))

What is critical in both of these examples (Propus and Navi) is that because the team members had worked together for a long time they had developed trust in each other. Therefore, these teams contained team members who trusted each other in the execution of their part of their task at hand. In Castor (Polaris) the situation was different because the team had been through turbulent times in the previous year. Several team members had been let go as they were found to be difficult to collaborate with. This resulted in the team containing only two experienced developers at the time of the study and several new members. The new version of Castor was in the process of developing work processes and figuring out the best ways of working together. The team spent much time in discussion and meetings, which the researcher's observations revealed to be characterised by long and heated discussions about the best way to proceed with tasks as well as about the work processes in the team. Another team,

Media (Orion), which contained several junior members as well, experienced different challenges. The project manager (who worked part-time and had Wednesdays off) referred to these as a need to build up more responsibility in the team:

“One of them, Kim, he comes round on his day off on Wednesday if needed, but it’s always a bit reluctant, like, “Do I really need to?” “I would be really, really pleased if you would.” So I think that’s the biggest challenge... growing the team, making it more mature so that when I go home, when I’m home on Wednesday I never worry. But there’s always... what we need to do is a bit of correction work on Thursday and I would like that to become less...” (Rob, Media (Orion))

While this comment reflects that some team members in Media were more junior than others, it can also be interpreted as reflecting a lack of trust. The senior developers in Media, made similar comments, that they had to check up on more junior members and make sure they would not sit around idly on days of absence of the part-time working team lead. Therefore, rather than just building up responsibility in the team, trust would enable more responsibility so that the reduced presence of other members in the team would have less impact on collaboration.

In summary, temporal stability of teams was reported to result in more ease in adapting to FWA use and to reduced passive facetime, as members knew each other well and trusted each other. In contrast, teams with low temporal stability needed more facetime, in part because of a lack of trust in the team. Therefore, I propose that high levels of temporal stability mitigate the impact of FWA use on collaboration within teams.

4.4.3.2 Task urgency

At certain points in time, tasks were perceived to be more urgent and critical and it was deemed important that team members were physically present at those moments. Propus (Libra) had experienced difficulties in the past due to several part-time working team members being off on a Friday, which is a critical day in their work cycle as it is the day when they need to deliver their weekly tasks. The absence of several members on that day had a significant

impact on those left working at the office, who experienced a higher workload and stress. Therefore, during critical times it was perceived necessary for team members to be present in order to be quickly and efficiently able to deal with issues that might come up, which would take a longer time to deal with if the person were not present. This is reflected in a quote from a member of management in Orion:

“But during the project, when there is enough time, there isn't much of a problem there. People know that if someone isn't there, they discuss it the day before or at least give me the information. That works really fine. The problem starts when we are moving to production with the entire solution. When a system is in production, it's a problem if someone isn't there. That's the time when the problems start, if someone created a piece of the system and he knows everything about it and if he isn't there, that's when the problems start.” (Jan-Willem, Management, Orion)

In addition, as discussed previously, team members reported not reaching out to absent workers unless it was critical. The level of urgency was reported to determine whether teleworkers or part-time workers were contacted. Absence of flexible workers was also reported to affect the other team members' work at critical moments in the work cycle:

“It's not always easy because sometimes on Wednesday we have a rush of work, testing-wise. So that part, it's not always easy that Ank isn't there. But on the other hand it's manageable. We know that on Wednesday I'm the only one testing. So the development team knows that sometimes they'll have to help with it. And you organise around it.” (Gregory, Castor (Polaris))

Some members reported feeling bad about their arrangements and that they should have worked at the office rather than from home, or should have come in on their day off (because of issues that emerged). Task urgency therefore affected the experience of all team members, regardless of whether they worked flexibly or not.

In summary, during urgent or critical stages of a project, when issues were more likely to arise, presence of both teleworkers and part-time workers was valued, in order to be able to resolve problems quickly. As a result I propose that high levels of task urgency amplify the impact of FWA use on collaboration.

4.4.4 Structural characteristics

Structural characteristics refer to the structural characteristics of the teams and how these are managed. Four features emerged from the analysis, which all pertained to enabling collaboration within the teams and minimising the impact of FWAs on collaboration. These features were regular face-to-face meetings, frequency of absence, predictability of absence and synchronisation of presence.

4.4.4.1 Regular face-to-face meetings

All teams had formal weekly meetings and some had daily status meetings as well (for details see Appendix D). Teams with a daily status meeting (Castor (Polaris), Gemma (Orion), Media (Orion), Propus (Libra) and Electra (Libra)) reported that the benefits of a formal daily collaboration platform were that members became aware of what other team members were doing and therefore were able to track each other's progress. Daily meetings would also provide opportunities to ask for help if needed and enable the solving of problems or bottlenecks quicker. The daily meetings were reported to support collaboration and learning in the team because of the opportunity they provided to share information, knowledge and ideas:

“Because otherwise you can really be stuck in some task, not forever, but for a long time and you are, as a developer, maybe too shy to admit it... and maybe people will think that you're stupid or something because you couldn't figure it out for yourself and it's like.. you don't want to say it.” (Erwin, Electra (Libra)).

As a result of teams talking to each other during the daily status meeting, they were reported to be more likely to also talk to each other outside of these meetings. Status meetings were reported to help in clarifying and setting the direction for the team – keep “all eyes on the same goal” (Ben, Propus (Libra)). This was even reported to result in a quicker turnaround time since problems could be detected earlier than usual and dealt with. In Media (Orion) this was described as “getting unstuck”:

“Well, you just get unstuck, it's quite easy to get stuck and blinded by your own vision for quite some time, while trying to work on something complex. If you just

can't get your head around it, it may take infinite time. If someone doesn't pull you out or help you to see things differently." (Klaas, Media (Orion))

Furthermore, all teams with weekly or biweekly planning or retrospective meetings (Castor (Polaris), Navi (Polaris), Propus (Libra), Media (Orion)) reported that these meetings allowed teams to deal with issues, reduce tensions and improve their collaboration work processes:

"Because sometimes people say something that's useful for everyone, like "I do this in this way", which could be good for me. Or because someone has a problem and we get to talk about it, you get to a better solution for everybody, even for those that didn't mind the whole situation." (Peter, Propus (Libra))

Across teams it was expected that team members should be present for the weekly meetings, out of respect for the team and in order to provide alignment between all team members. This means that it was expected that part-time workers would not have their day off on the day of the weekly meeting. Similarly, teleworkers were expected to be present in the office when these meetings took place, with only a few exceptions:

"We have done meetings where one member of the team was remote. So he just called in from home. It's not as easy as talking face-to-face though. So for these two meetings we really would like people to be there ... else the conversation is less fluid. There's also sometimes interference from the environment. In that case the colleague was staying at home because of a sick child, which is completely understandable. But yeah, the baby was crying throughout the meeting." (Ank, Castor (Polaris))

The same expectancy of presence was generally the case for daily status meetings, although part-time workers would not participate on their day off and teleworkers would sometimes not participate in person but would ask another member to inform the rest of the team about what they want to share and would be informed of the outcome from the meeting afterwards by the same person. Furthermore, all team members were expected to respect meeting times, both of daily status and weekly meetings, and be present in time to attend them.

In summary, regular face-to-face meetings (which flexible workers were also required to attend in most cases) were reported as highly valuable in the teams

as they allowed teams to deal with issues, monitor progress and learn from each other. As a result I propose that regular face-to-face meetings mitigate the impact of FWA use on collaboration within teams.

4.4.4.2 Frequency of absence

Across teams, the frequency of FWA use was reported to play an important role in determining how collaboration within the teams was affected. For example, being absent from the office for four days a week, whether working part-time or teleworking, was perceived to have a different effect from an absence of one day. Having a sufficient amount of opportunities to interact with each other was reported as critical. In most teams, it was not perceived necessary to be present for 40 hours a week since much of the work was individual in nature. Nevertheless, an absence of one day a week was reported to be enough (absence because of teleworking or working part-time), since it still left four days of passive facetime and therefore enough time for planned and unplanned collaboration opportunities with colleagues:

“...It's not necessary 40 hours a week. You need facetime communication to look each other in the eye and talk while you're working on the same monitor and computer. But there's also lots and lots of time where you can work by yourself, as I'm already doing even though I'm new. I can work a lot by myself, so I can do the same at home. But I do think facetime communication is necessary though, you can't completely go without it...” (Ruud, Propus (Libra))

However, an absence of more than a day a week was reported to become problematic, even in Navi (Polaris) and Castor (Polaris), which operated in a more accepting culture of telework than the other teams. The team lead of Navi reported that the amount of passive facetime played an important role when asked whether FWA use had an impact on collaboration:

“No, for the moment not because I think most of them are working one day from home, sometimes if needed it can be two. But most of them are just working one day from home. And the thing is, the other days they are here so they talk to each other, they make sure that everything is clear.” (Gwen, Navi (Polaris))

The experience of implementing teleworking in Electra (Libra) a few years prior to the study taking place had led to the company not allowing telework at all,

except in special circumstances. This was the result of an individual who teleworked and worked only during evenings and nights, and was therefore rarely seen at the office. This had detrimental effects:

“And then if there were some problems the next day, for example, after the software was released and the customer had some problem with it, then he was also never there to fix this because he was not doing normal work hours when the Service Centre people had helpdesk calls, and yeah, we had to fix that and he was never there...” (Erwin, Electra (Libra))

It is interesting that the problem in Electra (Libra) was considered to be a consequence of telework, while in fact it was rather a result of extreme flexible working hours. Therefore, telework during normal working hours may not have caused the same difficulties to the team. Another factor found to impact on the teams was the amount of people absent per day. For example in Media (Orion) two people had their day off on Wednesdays, which caused more work to fall on the shoulders of the other team members. This was particularly the case because one of the absent team members also led the team and in his absence senior members would have to deal with management tasks, such as finding work for more junior team members if needed. Propus (Libra) had experienced an even more difficult situation a few months prior to the study taking place, when several part-time working team members all had their day off on a Friday:

“In the past it would be a bit difficult because until the end of last year we had an external party in our team of four people who also worked four days in the week and skipped Fridays. Then Ben and Peter also skipped Fridays. So most of the time it would be only Robert and me. For a lot of rounding up we need at least three people. So that was a bit problematic.” (Jorgen, Propus (Libra))

This also relates to a problem of task urgency discussed previously, suggesting that as more people are absent at critical stages, as is described by Jorgen, difficulties in the team are amplified even more.

In summary, it was reported as critical that absences from the office were not overly frequent so that team members still retained significant opportunities to interact with each other. Similarly, it was reported to be important that team members were not all absent on the same days of the week as this resulted in a

heavy burden on the remaining members. Therefore, I propose that higher frequencies of absence (measured in amount of hours/days individuals are absent or amount of individuals absent each day) amplifies the impact of FWA use on collaboration within teams.

4.4.4.3 Predictability of absence

Predictability of absence was also frequently brought up in the teams as important in determining how FWA use affected collaboration. Predictability refers to regularity of use of FWAs and therefore whether the absence from the office is predictable and regular, such as always on the same days every week, or more irregular and *ad hoc* (different hours or different days each week). Several teams (Castor (Polaris), Navi (Polaris), Propus (Libra)) reported benefits from regularity of absences, such as people being off or working from home on the same day every week. This made it easier for other team members to plan and adjust around the absence of the flexible worker, such as asking questions the day before. The need for collaborating with the other member on his or her day of absence from the office would therefore be minimised. The following quote demonstrates the difference between managing predictable days of absence and unpredictable days of absence, as observed by the software development coordinator in Libra:

“Ben is always working Monday to Thursday. And then they [referring to his team members] are thinking, if they have to ask him, they’re going to on Thursday because of the fact that on Friday they can’t do it anymore. But with Toine, you don’t know when he’s working or not working. And then it’s much more difficult. So when you have the same days every time, then I think it is better.” (Floor, software development coordinator (Libra))

Predictability would also create a form of stability and clarity of expectations in the team, as team members reported how they could “count on” the presence of a teleworking team member every morning (Daniel, Propus (Libra)). Furthermore, predictable absences were also reported to simplify work process coordination as absences could be averaged in the amount of work the team would complete in a week. The benefits of predictable schedules is reflected in the following comment:

“...It's always the same day, except for Robert because he has a different situation, but then Ben is free on Friday, Jurgen is free on Tuesday, Peter is free on Friday, you know that... It's a schedule, it's not that one week on Monday, and then where is he? It's always the same day, so that's nice.” (Ferry, Propus (Libra))

In summary, predictability of absences enabled teams to adapt and plan around FWA use in the team, including not planning meetings or other collaborative activities on days of a flexible worker's absence. It would also help other team members to know that they would need to ask questions on the day before the teleworker or part-time worker would be absent. This would further enhance the likelihood that part-time workers could have their day off undisturbed and would allow teleworkers to focus, without too many disturbances, on the tasks they chose to work on from home. Therefore, I propose that higher levels of predictability of absences mitigate the impact of FWA use on collaboration within teams.

4.4.4.4 Synchronisation of presence

Synchronisation refers to synchronising the presence of team members in order to maximise the benefit of the team working face-to-face. The value of all team members being present in the office on certain days was reported in several teams (Navi (Polaris), Gemma (Orion)). This was perceived to allow the team enough time to engage in discussions, organise meetings and consult with each other. Challenges associated with absences at different times or days were acknowledged, such as in Navi:

“Maybe we could have more homeworking but then it should be on fixed days, I mean ... we're three developers in our team, and if I worked, for example, Monday and Tuesday at home and Piet, Wednesday and Thursday and Robin, Friday, we'd never see each other as a group. So you can do that but you have to say for example, Monday everybody comes to the office and the other days you can work at home, then you're at least one day with the whole team together.” (Dennis, Navi (Polaris))

The same logic was reported to apply to working hours, hence the value of having certain core hours in place, which determine the teams' hours of co-presence each day in the office:

“You see that if people all in the same team are coming in at different times, then it could be a bit of a problem...That's the reason why we say well, latest half past nine, it's the time you can come into Orion. And you have to be here until at least, well, it's four o'clock, then if you start at half past seven. So at least you have enough time to discuss things.” (Jan, context, Orion)

In summary, it was reported to be valuable that presence at the office was synchronised in order to gain maximum benefit from the passive facetime of team members. This would provide opportunities for *ad hoc* discussions in the team as well as informal and formal meetings. Therefore, I propose that high levels of synchronisation of presence mitigate the impact of FWA use on collaboration.

4.4.5 Individual proactive behaviours

Cross-case analysis revealed that it was also important that flexible workers demonstrated proactive behaviours. This meant that flexible workers should be aware of the implications of their work arrangement for the team and actively address these implications rather than ignoring them. These proactive behaviours can be divided into two parts: proactive availability, referring to flexible workers being available to others, and proactive responsibility, referring to flexible workers being considerate of their team when choosing when to work flexibly and informing team members of any implications their absence might have.

4.4.5.1 Proactive availability

Proactive availability of flexible workers refers to how important it was that flexible workers were proactively available to their team members when they were present in the office as well as when away from it. Team members from several teams reported how they valued that, when flexible workers were physically present at the office, they would be available for discussions, to answer questions, help others, deal with issues and engage in any sort of *ad hoc* or planned collaboration:

“So then if there are any questions during development, normally Gwen is very easy to reach. So if you ask her something, even if she's busy with something you

can pop a quick question and she will respond. It makes it really easy to see if it's the correct way." (Piet, Navi (Polaris))

When flexible workers were not proactively available to their team members, mostly because they were immersed in too many different obligations when working at the office, they were perceived as not supporting their team, with possible negative effects on collaboration. In Sirius (Orion) this was perceived to be a problem since a part-time worker had a management role in the team but also had multiple other obligations and therefore his structural availability to the team was limited:

"Ronald is very, very, very busy. And if you have a question he usually says, "Well, let me check my schedule, if I have time to answer" instead of an answer. So yeah, it's very hard to contact him as a person." (Dennis, Sirius (Orion))

Proactive availability of teleworkers was also reported as valuable, in that they would be reactive and reachable and would respond to chats, emails or telephone calls quickly. A similar dynamic applied to part-time workers on their days off. It was reported to be important that they were available in case of emergency and that they would pick up the phone if they were called and be willing to help. This was found to mitigate problems surrounding reduced passive facetime:

"If someone created a piece of the system and he knows everything about it and if he isn't there, that's where the problems start. Then well ... someone else has to fix it, nobody knows what it was doing exactly. If the guy is called, he has a free day, so he's not available sometimes to pick up the phone immediately. That's the main problem..." (Jan, Management, Orion)

A team member of Navi (Polaris) mentioned that reduced facetime in the office was not a problem as they were all "very connected, so it's easy" (Robin, Navi (Polaris)) referring to the fact that they could easily reach each other if they needed to. Interestingly, it was not uncommon in the Navi team for messengers to be turned off when working from home in order to allow for better concentration. However, in the case of Navi, this was not perceived negatively because of Navi's temporal stability and established ways of working. Several members in Castor (Polaris), which made extensive use of messengers,

reported that team members were not necessarily very responsive to messages. This would refer to those working from home but also include those working at the office, causing bottlenecks and delays on both sides:

“On the other hand when I’m stuck I want an answer right away. And sometimes when you’re home you have the impression that no one is listening to Slack and then I just start calling people, because it can happen. You’re concentrated, you’re focused on one window and you don’t see the pop-ups from Slack. But when I don’t get an answer for an hour then I start calling people.” (Ank, Castor (Polaris))

It was therefore perceived as critical that when flexible workers were present at the office their presence could be counted on as well as their willingness to help, so that other team members could ask all the questions they needed. Yet, the requirement to be available can also be criticised both in the case of part-time work as well as telework. Part-time workers work fewer hours per week and receive less pay accordingly. Requiring them to be responsive on their days off reaches into their home sphere and can have a negative effect on their work-life balance and their own personal well-being. Teleworkers work from home for reasons such as to be better able to focus, in which case requiring them to respond immediately to any form of communication can disturb the focus they sought in working from home in the first place.

In summary, proactive availability of teleworkers and part-time workers was perceived as valuable so that other team members could have their questions answered and issues dealt with without further waiting. As a result, I propose that high levels of individual proactive availability mitigate the impact of FWA use on collaboration within teams.

4.4.5.2 Proactive responsibility

Another type of proactive behaviour influencing the relationship between FWA use and collaboration within teams is being proactively responsible. Based on the teams studied here, proactive responsibility of flexible workers with reduced facetime at the office can be divided into two parts: proactive responsibility in the timing of absence and proactive responsibility in informing others of work.

First, proactive responsibility in timing of absence means that team members who work part-time or telework considered their team's needs in choosing when they were off and which days or hours they worked from home. This was reflected by comments made about choosing to come in if needed on days a flexible worker would normally be off or by coming in for half a day rather than not coming in at all in order to take care of urgent matters and be available for the team (reported in Gemma (Orion), Media (Orion) and Castor (Polaris)). Navi (Polaris) and Castor (Polaris) both had teleworking members who felt proactively responsible towards their team when deciding when to work from home:

"I try to use the same day because it's easy for everybody. So most of the time I take Wednesday because Gwen also works at home... or well, she has half a day off on Wednesdays." (Piet, Navi (Polaris))

"I'm not one to easily say: "I'm going to work at home" because I always think it's easier to work here, most of the time, for the team. There are some days I insist on coming in, even if it's a real pain in the..." (Jonathan, Castor (Polaris))

Propus (Libra) had part-time and teleworking team members that chose their day off in consideration of other members. That meant they chose not to be absent on the same day as other members to ensure that there would be enough people in the office at a given point in time, especially at project-sensitive timings, such as at the start of new projects. Electra (Libra) emphasised showing respect to others by being present for meetings or meeting days:

"It's also disrespectful to the other members. I mean there can be some really strange traffic jam somewhere; it can be an exception that you miss it. But if you do it like two times a week, every week, no, it will not be great." (Erwin, Electra (Libra))

It was also perceived important that team members discussed and consulted their absence with their team and in some cases sought approval from team leads or members of management. The goal was that the team would be informed on when an individual would be present and when not, reflected in a representative comment from a team member in Castor (Polaris):

“There is an expectation of knowing where everyone is at a certain point in time, which is for me very normal, you have to know is Ank coming today or is she working from home or is she just not working. So that you know if you can interrupt somebody’s work and ask a question and so on.” (Michel, Castor (Polaris))

If flexible workers informed other team members about their absence, teams could more easily accept and adjust to their absences. It also made it possible for team members to make a comment if flexible workers’ absences would be a problem for the team or the task and solve it by, for example, choosing another day instead. It was perceived as essential to communicate: “just tell them, it’s not that you just leave” (Mark, Sirius (Orion)). In some teams it was considered normal to discuss with the line manager if a team member needed a few hours off (Propus (Libra), Electra (Libra), Gemma (Orion)). However, it was more common to consult within the team so everyone knew about each other’s plans. As long as this was respected there was also some freedom:

“I think it’s important to know that everyone at least was here. It’s not: “Hey, where’s Lucien?” “I don’t know. Apparently he’s working from home or he’s free, I don’t know.” No, you have to let people know that you’re in the house or not.” (Lucien, Gemma (Orion))

However, expecting flexible workers to plan their absence from the office in respect for other members may not always be possible since flexible workers may have other obligations they need to attend to. As such, their family situation may require them to work part-time on certain days only, which may not fit with the schedule of the team. Coming into the office may be easier for teleworkers since they are working but it may still disrupt delicate work-family planning, e.g. having to pick a child up from school at a certain time. Such requirements may therefore benefit the team but have a detrimental effect on their family sphere, suggesting that better team planning could be a solution rather than requiring team members to put their work in first place. Clear communication in the team is reflective of respect for others and shows that if the team is informed about absence it can more easily adapt and plan around it, possibly minimise issues, much like the effect that predictability of absence (section 4.4.4) is likely to have.

Second, proactive responsibility could be observed by flexible workers considering the implications of their absence on other team members in terms of their work, such as by transferring work to others if needed. This could be observed in teams in which team members reported how they would not start big projects on days before their day off, come in to the office if there was a client appointment happening, and inform and transfer work to others if needed (e.g. Propus (Libra), Sirius (Orion)). It was seen as important that absent workers informed and updated their team members if they were involved in critical tasks the day or days before their day off, if these were likely to spill over onto their team members. This would enable other team members to deal with issues possibly arising. In this context, a team member of Propus (Libra) explained that individuals had to be responsible enough to realise that they are part of a team:

“You don’t stay in your own private space and let everyone else deal with their own stuff. You share each other’s responsibility by taking your own.” (Jorgen, Propus (Libra))

At the time of the study, the absence of a team member in Media (Orion), who was off on holiday for several weeks, caused issues in Media (Orion) resulting in team members comparing absences that result from FWA use to absences as a result of being on holiday. This team member had sole extensive knowledge of a particular project, which had critical issues during his absence and other team members were faced with having to deal with it. A representative comment emphasises the need to show proactive responsibility and inform the team of possible implications that absence might have in terms of work:

“So I’m okay with people leaving but you have to make sure that everybody knows what you’ve built and how it works. Or that someone’s available. I work with Aad and Aad knows almost everything that’s running everywhere. So if I’m gone, Aad is here so that’s not a big deal.” (Bert, Media (Orion))

By being proactively responsible in transferring work to others and being aware of the implications of absence, it is likely that both part-timers and teleworkers would be minimising the need to be contacted on their days off or days working

from home. This could possibly minimise issues amassing that these workers then need to deal with once back in the office. Such behaviours therefore cannot only benefit other team members and the team but also the flexible workers themselves.

In summary, proactive responsibility emphasises the importance of flexible workers being considerate of the team when choosing which days to be absent. It also emphasises the importance of flexible workers informing their team of any implications of their work that may come up in their absence. As a result I propose that high levels of proactive responsibility mitigate the impact of FWA use on collaboration within teams.

4.4.6 Environmental characteristics

Another important consideration is that the teams were nested in organisational and national layers that may shape the perceptions and experiences of team members. The extent of use of FWAs in the seven teams varied, as did the extent of implementation of flexible working in the three organisations. Yet, overall, there was significant value placed on collaboration happening face-to-face across all cases and organisations. In all three organisations, part-time working was a widely accepted way of working, which may reflect the acceptance of part-time working at the national level, particularly in the two Dutch organisations, Orion and Libra. It may also reflect that part-time contracts were usually limited to 32-36 hours a week, which is close to full-time contracts and means part-time workers still work close to a full workweek. Working flexible hours, within boundaries set by the organisation, was also accepted, but only insofar as the work processes of the team were respected. This meant that all team members would arrive in time for the daily status meeting of their team usually scheduled at 9:15 or 9:30 every morning. Therefore, collaboration processes shaped the extent to which the teams had flexibility in their working hours. However, only in the teams in Polaris, Navi and Castor, was teleworking accepted as a normal way of working. Regardless, team members in Castor and Navi reported not working more than one or two days a week from home to minimise the impact their absence would have on their team. Team members in

both Castor and Navi reported that during the days they worked at home they focused their efforts on tasks that did not require input from others, to minimise the impact on other team members and to be able to concentrate better in the absence of disturbances. Therefore, although operating in a more accepting culture for telework, facetime was still perceived as important to collaboration and team members were careful to limit the frequency of use in consideration of the effect on the team.

The value placed on facetime may be explained by the fact that FWAs had not been formally implemented in any of the organisations studied. That means that although two organisations had formal policies, these were on paper rather than in practice and there had been no training or discussion initiated by management on FWAs, their implications and effects. All seven teams therefore adjusted and adapted to flexible working on their own, drawing from individual team members' assumptions, experiences and opinions of FWAs and their implications. It can be speculated that some of the risks associated with FWA use, such as freewheeling and miscommunication, may reflect that the teams were nested in a contextual reality in which presence at the office and face-to-face collaboration remained the norm. Therefore, team members acted based on what they had become accustomed to and were familiar with. As a result, better training on FWAs may mitigate these issues. Furthermore, experiences of delays in response times may, to some extent, reflect cultural expectations of immediate responses. Team members may therefore be accustomed to being able to address issues immediately, for example by approaching a colleague or manager when in need of advice.

In summary, the findings reported in the previous sections may reflect the contextual layers in which the teams were nested. The acceptance of part-time work may reflect a national culture in which part-time work is very common and widely accepted. The value of facetime may reflect organisational cultural norms where face-to-face collaboration is considered ideal, where trainings and discussions on implications of FWAs had not taken place and where team members were used to being able to deal immediately with issues that arose.

4.5 Summary of findings and a theoretical framework

In Figure 4-1 the findings of the study outlined above are put forth in a theoretical multi-level framework. The framework is built on Bedwell *et al.*'s (2012) framework of collaborative performance and illustrates how the use of FWAs impacts on collaboration within teams. The mid-section of the framework demonstrates how the use of FWAs affects collaboration within teams, through reduced passive facetime of team members. A total of six contextual features are then presented as influencing this relationship. Four of these are at team-level: team composition, task characteristics, temporal characteristics and structural characteristics. One is individual-level, namely individual proactive behaviours, and one is positioned as underpinning the whole framework, namely environmental characteristics. I will discuss the framework and its alignment with current literature further in Chapter 5.

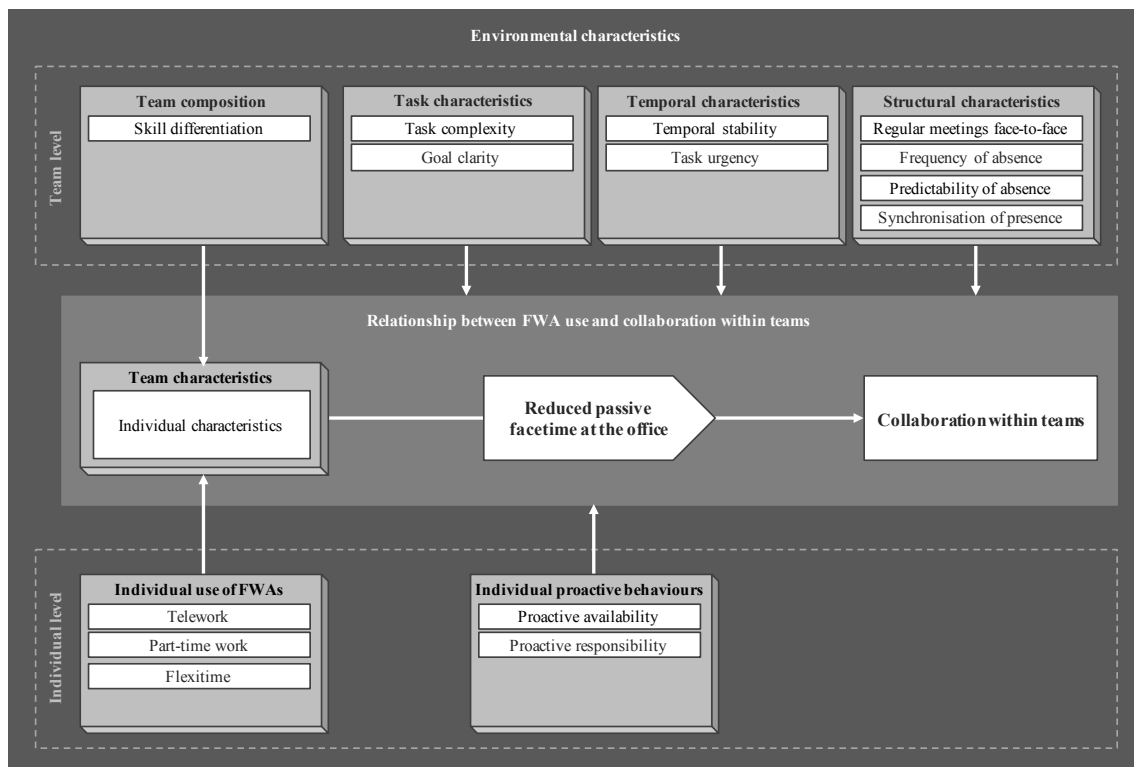


Figure 4-1 The impact of FWAs on collaboration – A theoretical framework

4.6 Chapter summary

In this chapter I have explained how FWA use affects collaboration as well as what features mitigate or amplify this relationship. The study revealed that the impact of FWA use on collaboration could be explained by reduced facetime and in particular reduced passive facetime. Passive facetime of team members enabled *ad hoc* collaboration and consultation between team members, which was the primary way of collaboration in all teams. The impact of reduced passive facetime as a result of FWA use was reported to be delays in response times, risk of miscommunications and risk of freewheeling. However, not all teams experienced the impact of FWA use on collaboration in the same way. Six sets of features were identified that explain this relationship. These either amplified or mitigated the negative relationship between FWA use and collaboration. At the team-level, these included (1) skill differentiation as a team compositional feature, (2) task complexity and goal clarity as task characteristics, (3) temporal stability and task urgency as temporal characteristics, and (4) regular face-to-face meetings, frequency of absence, predictability of absence and synchronisation of presence as structural features. At the individual level, (5) individual flexible workers' proactive behaviours included proactive availability and proactive responsibility. Finally, (6) environmental characteristics are also proposed to underpin the whole framework, as the teams were nested in a particular environmental setting, in particular an organisational and national context. The findings are put forth in a theoretical framework, which will be further elaborated on in Chapter 5.

5 DISCUSSION

5.1 Chapter introduction

In this chapter I discuss the findings presented in the previous section in the context of existing literature. I start by presenting a summary of the findings (section 5.2). In section 5.3 I discuss the relationship between FWA use and collaboration and the importance of passive facetime as an enabler to collaboration. I explore how the three types of FWA were experienced as impacting on collaboration, how passive facetime was double-faceted in this study when compared with previous work and discuss the consequences of reducing it. In section 5.4 I discuss the contextual features identified and integrate them with findings from current research. In section 5.5 I discuss the theoretical framework proposed, the role of theory in the framework, differences to virtual teams and I discuss other possible influencing features, namely the software development context, supervisors and gender. In section 5.6 I summarise the chapter.

5.2 Summary of findings

This study presents evidence from seven case studies conducted in software development teams with the purpose of exploring how team collaboration is affected by the use of FWAs and what contextual features may explain this relationship. Based on study findings I propose a theoretical framework set forth in Figure 4-1 and Figure 5-1. The framework outlines how FWA use impacts on collaboration within teams through reduced passive facetime, which resulted in fewer opportunities for team members to collaborate informally face-to-face. Six sets of contextual features were found to influence the extent to which FWAs would impact on collaboration. These were team composition, task characteristics, temporal characteristics, structural characteristics, individual proactive behaviours and, finally, environmental characteristics (in particular the national and organisational context), within which the entire framework is nested.

5.3 FWA use and collaboration – the value of facetime

This study found that FWA use impacted on collaboration because of a reduction in the passive facetime of flexible working team members, which resulted in delays in response times, risk of miscommunications and risk of freewheeling. I will start by discussing the middle section of the framework, which outlines the relationship between FWA use and collaboration (Figure 4-1 and Figure 5-1). I will discuss the first half of the relationship presented – how the three types of FWAs resulted in reduced passive facetime. I will then explore the second half – the consequences of reduced passive facetime on collaboration.

5.3.1 Three types of FWAs – same mechanism

Analysis of the cases revealed that the three types of FWAs, flexible working hours, telework and part-time work, were all experienced as impacting on collaboration through the same mechanism of reduced passive facetime. This means that working with teleworkers, who were working although absent from the office, members working flexible hours, which had less temporal overlap of presence with other team members, and part-time workers, who had certain days off, was experienced in a similar way. A particularly interesting consequence of this finding is that not working (part-time workers) and working from home (teleworking) was interpreted in a very similar manner. Although teleworkers were still working while physically absent, team members usually interpreted teleworking in one of three ways. First, it was interpreted as a time when an individual was working on individual activities and should only be disturbed if absolutely necessary. Second, team members were frequently not comfortable with contacting teleworkers and reported a threshold or barrier in doing so, which they did not experience when working face-to-face. Third, they found the communication media available (emails, messengers, telephone) to limit the usefulness of interactions, especially because of the lack of richness. As a result, issues were often rather put on hold until the teleworker would be physically present again and discussions could happen face-to-face. Those that were not within reach (located in close physical proximity to the office) were

perceived as almost out of touch, although they could be contacted via telephone or messengers. These observations can be explained by media richness theory (Daft and Lengel, 1986), which highlights the superiority of face-to-face interactions to other ways of interacting. They confirm the concerns of teleworkers raised in studies where teleworkers report being out of sight, out of mind when working away from the office, with possible career consequences (e.g. Brocklehurst, 2001; Richardson and McKenna, 2014; Sewell and Taskin, 2015). Furthermore, these findings build on studies that have reported office-based workers to find it easier to approach other office-based workers because they are unsure of whether teleworkers are working at a given moment, or may not wish to distract or disturb them (Duxbury and Neufeld, 1999; Fogarty, Scott and Williams, 2011). My findings further advance this discussion by demonstrating how physical presence is being equated with availability and physical absence with non-availability. I will discuss this further in the following section.

5.3.2 The importance of passive facetime

My study identified reduced facetime as the mechanism through which FWA use impacts on collaboration. This finding affirms previous work in which reduced facetime is considered as a critical problem associated with FWA use made explicit by studies such as Van Dyne, Kossek and Lobel's (2007) conceptual study of the impact of work-life practices on group processes and group-level organisational citizenship behaviours. Most studies that explore the implications of FWAs suggest increasing face-to-face interactions as a moderator or mediator of various issues arising because of teleworking, such as isolation (e.g. Golden, 2007; Golden, Veiga and Dino, 2008; Golden and Raghuram, 2010). However, the meaning of facetime is rarely clearly articulated as it may refer to presence (to enable participation in social interactions with co-workers and others), or actual face-to-face interactions or visibility at work, often for impression management purposes (Felstead, Jewson and Walters, 2003; Lawrence and Corwin, 2003; Van Dyne, Kossek and Lobel, 2007).

This study contributes by stating that the mechanism through which FWA use impacts on collaboration is reduced *passive* facetime. Passive facetime is defined as the amount of time an individual is passively observed at the office and refers to the mere observation of others and not actual interactions (face-to-face interactions would be labelled “dynamic” facetime) (Elsbach, Cable and Sherman, 2010). Passive facetime has frequently been studied in connection with individual impression management and has been associated with traits such as dependability, commitment, responsibility and dedication (Elsbach, Cable and Sherman, 2010). It shares similarities with the construct of presence awareness, which refers to the subjective awareness of which team members are around and knowing that they are accessible and physically available to each other through presence awareness cues, such as physical presence at one’s desk or a coat lying on a chair (Espinosa, Slaughter, Kraut and Herbsleb, 2007; Malhotra and Majchrzak, 2014). However, most research on presence awareness is focused on the design of technological tools that can bring some sense of collocation to virtual teams that do not have facetime (Espinosa, Slaughter, Kraut and Herbsleb, 2007). This study highlighted a double-faceted value of passive facetime by explaining the impact on collaboration – as demonstrating availability and as an enabler of collaboration.

5.3.2.1 Passive facetime as a demonstration of availability and accessibility

In the teams studied, physical presence at an office was interpreted as availability and absence, in most cases, as unavailability. Therefore, passively present team members demonstrated their availability and accessibility through being physically present at work and thereby also demonstrated commitment and dedication to the team. These findings confirm findings of studies that have discussed the “invisibility” of flexible workers and the need to demonstrate dedication and career commitment through physical presence while working flexibly (Felstead, Jewson and Walters, 2003; Taskin and Devos, 2005; Richardson and Kelliher, 2015). It also affirms studies that have reported a need of flexible workers to engage in display behaviours and strategic self-presentation to enhance their visibility and perceived availability (Felstead,

Jewson and Walters, 2003; Halford, 2005; Lal and Dwivedi, 2009; Sewell and Taskin, 2015). From a group standpoint, Van Dyne *et al.* (2007) argued that reduced facetime led to both coordination and motivation challenges in teams containing flexible workers because of reduced awareness, lower quality communication and uncertainty about commitment and capability in the group. They argued that the effects of these challenges could be mitigated, e.g. by strategic self-presentation, again therefore corresponding with my findings of passive facetime as an impression management tool (Van Dyne, Kossek and Lobel, 2007). Passive facetime is, therefore, in part, interpreted as a way to demonstrate commitment and availability to the team.

5.3.2.2 Passive facetime as an enabler of informal collaboration

In addition to demonstrating availability to the team through passive facetime, this study added an additional dimension as passive facetime was interpreted as an enabler to collaboration. As such it was interpreted as providing opportunities to consult with other team members *ad hoc* and informally face-to-face.

This finding is an important contribution to the literature as it demonstrates that facetime at the office is not only a display behaviour, nor does it necessarily result in face-to-face interactions. It advances the work of Van Dyne, Kossek and Lobel (2007) who argued that coordination losses as a result of reduced facetime in workgroups had to do with lower awareness because of a reduction in the quantity and quality of communication and the increased asynchrony of communication. In this study, coordination losses were found to be a result of reduced opportunities to communicate, rather than the actual nature of communication. Furthermore, this study advances the work of Lawrence and Corwin (2003) by highlighting that it is not participation in interaction rituals that is key, but rather the opportunity to participate, especially since important interaction rituals may be informal and happen *ad hoc* (Lawrence and Corwin, 2003). It demonstrates that facetime is not only about providing flexible workers with the ability to participate in relations with co-workers, as suggested by Felstead, Jewson and Walters (2003), but that passive facetime also carries

important benefits for co-workers and the team in which the flexible worker is situated, as a whole.

Furthermore, the finding that passive facetime, rather than actual face-to-face interactions (dynamic facetime), matters in the relationship with collaboration provides additional support for studies that have argued that time spent face-to-face should allow plenty of opportunities for *ad hoc* and informal consultation, conversation and socialisation (Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011; Wilton, Páez and Scott, 2011; Richardson and McKenna, 2014). The reported value put on physical proximity within the office as an enabler of collaboration affirms studies which have found physical proximity to enable continual awareness and communication (e.g. Teasley *et al.*, 2002; Waber, 2013), especially when working in high velocity environments and in ambiguous task situations (Oliver and Roos, 2003).

The value of passive facetime as an enabler to collaboration also reflects that outside of formal collaboration and coordination, which happened during daily and/or weekly meetings, most collaboration within the teams was informal. As such, team members reported to rely on spontaneous and *ad hoc* interactions (e.g. asking a question when encountering a problem) and passive facetime provided opportunities to engage in such spontaneous interactions. The benefits of spontaneous interactions is widely acknowledged in the literature, including how people can learn from and help each other, get to know each other, monitor progress, deal with conflicts, anticipate each other's strengths and weaknesses, collaborate and coordinate (Perry, Staudenmayer and Votta, 1994; Kiesler and Cummings, 2002; Hinds and Mortensen, 2005). Spontaneous interactions often supplement more planned, formal communication events where topics and timeframes are constrained (Olson and Olson, 2000; Hinds and Mortensen, 2005). The findings of this study confirm that FWA use reduces opportunities for spontaneous interactions reported in previous work (Cooper and Kurland, 2002; Allen, Golden and Shockley, 2015; Sewell and Taskin, 2015), with especially negative consequences for tacit knowledge sharing and creation as these happen through face-to-face socialisation processes

(Raghuram, 1996; Pérez Pérez, Martínez Sánchez, Carnicer and Jiménez, 2002; Golden and Raghuram, 2010; Taskin and Bridoux, 2010). The acceptance of interruptions within the teams also highlights the importance of informal collaboration. Although interruptions were not ideal for individual members' own work progress, they accepted it when it was their own members who interrupted them, as this was regarded a part of being in a team. Outside interruptions were more negatively perceived. Therefore, this study contributes how passive facetime provides opportunities for informal interactions, which have an important value to collaboration, as outlined above.

Although the different types of collaborative behaviours set forth by Bedwell *et al.* (2012) were not the focus of this thesis but rather collaboration as the respondents defined and perceived it, the perceived value of informal collaboration in the teams studied shed some light on the impact on the different behaviours. While formal collaboration opportunities such as meetings allow for information processing and task execution behaviours and provide leadership to the team, sensemaking, adaptive behaviours and extra-role behaviours may be dependent upon passive facetime and opportunities to interact with co-workers. In particular, team members' sensemaking may change when they are exposed to other members face-to-face and can discuss concerns with them. Passive facetime also allows team members to build personal quality relationships with each other and with the organisation, which may encourage them to engage in adaptive and extra-role behaviours. Therefore, the relationship between FWA use, passive facetime, spontaneous interactions and the various collaboration behaviours, sheds some light on which aspects of collaboration are most affected by FWA use.

5.3.2.3 Differing views on facetime in exploratory study and main study

In the exploratory study, the consultants interviewed argued that facetime could be planned by scheduling meetings and events when team members would be present at the workplace, which goes against the prevailing argument in the literature that the key challenge of FWA use is reduced facetime (Lawrence and Corwin, 2003; Van Dyne, Kossek and Lobel, 2007; Taskin and Bridoux, 2010).

The findings of the main study provide a more nuanced perspective of these differences between the consultants view and the prevailing view in the literature. As such, facetime was found to be important but not because of the need for actual face-to-face interactions but rather because of the value in passive facetime of members, which enables them to reach out to each other when needed. The consultants view that scheduling meeting times is sufficient to ensure collaboration appears to be simplified and understate the value of reaching out to co-workers spontaneously when working collaboratively. Perhaps this reflects the consultants lack of organisational immersion in order to be fully be able to understand the collaborative processes in place, including the importance of informal collaborative opportunities. It may also reflect an enthusiasm to persuade organisations of the benefits of FWAs without fully acknowledging possible challenges. Most importantly though it reflects a lack of understanding of the real value of facetime in collaborative settings – i.e. of the value in having the opportunity to consult with other team members *ad hoc* and informally face-to-face. This therefore highlights a need to educate practioners on the value of passive facetime in collaboration and the importance of acknowledging its role in organisations.

5.3.3 Consequences of reduced passive facetime

Having established reduced passive facetime as a mechanism that explains the impact of FWA use on collaboration, the study revealed that reduced passive facetime had three consequences. These were delays in response times, risks of miscommunications and freewheeling.

These problems can, in part, be explained by increased reliance on electronic communication methods. As such, they reaffirm the findings of studies on FWAs as well as those from virtual teams that have found a reduction in face-to-face interactions and increased reliance on electronic communication to have negative consequences, such as delayed response times and increased risk of misunderstandings, uncertainties and conflict (Cramton, 2001; Montoya-Weiss, Massey and Song, 2001; Wilton, Páez and Scott, 2011; Andres, 2013; Breuer, Hüffmeier and Hertel, 2016), reduced communication quality (Marlow,

Lacerenza and Salas, 2017) and negative effects on coordination (Peñarroja, Orengo, Zornoza and Hernández, 2013). The increased ambiguity caused by reliance on electronic communication has been suggested to affect interpretations of cues (Fiore, Salas, Cuevas and Bowers, 2003) and to require additional effort to overcome deficiencies in information exchange and shared interpretation (Andres, 2013). In addition, individuals may need to proceed with tasks without the advice of others, risking suboptimal outcomes by not being able to obtain answers to urgent questions because of perceived unavailability or delayed response times (Cooper and Kurland, 2002; Golden and Raghuram, 2010). Sewell and Taskin (2015) also found that teleworkers' responsiveness played a role in impressions others formed of them, as if they did not respond promptly to questions they would risk being judged. These consequences, when interpreted as a consequence of relying on electronic communication methods, provide support for media richness theory (Daft and Lengel, 1986) and reaffirm the superiority of face-to-face interactions as a way of collaborating since it facilitates the development of shared interpretations and mutual knowledge in virtual teams (Cramton, 2001; Montoya-Weiss, Massey and Song, 2001).

However, in this study the reliance on electronic communication can only partly explain the experiences of delays, miscommunications or freewheeling in the teams. In the teams studied here, teleworking members teleworked at low frequencies, in general 1-2 days a week. Yet, this was still perceived as frequent enough for mentions to be made of the risks of misinterpretations and delays. This suggests that it is not only frequency of use that determines the impact on collaborative efforts, but other features may play a role, such as tasks, team composition or structural characteristics (these will be discussed further in the following sections). In addition, part-time work was also experienced to result in delays in response times, miscommunications and possible freewheeling, which is particularly interesting since part-time workers did not rely on electronic communication as they were not working on their day off. Therefore, it was their absence that carried risks because team members left at the office could not consult with part-time workers and therefore had to wait or continue with tasks with the possible result of freewheeling. This

suggests that electronic communication and physical absence have the same consequences. This is, in part, supported by studies confirming limitations of electronic communication methods, despite technological advances in communication and collaboration technologies, and the need and preference for face-to-face communication (Allen, Golden and Shockley, 2015; Karis, Wildman and Mané, 2016). However, this may also reflect that the teams did not have advanced electronic communication technologies available (these were limited to messengers and email). In addition, the use of such methods was not encouraged as facetime remained a norm. The role of the organisational setting will be further discussed in section 5.4.6.

In summary, FWA use affected collaboration through reduced passive facetime and not reduced dynamic facetime. Passive facetime was interpreted as availability and as an enabler to collaboration. These findings contribute to theory by outlining the mechanism through which FWA use affects collaboration, demonstrating that rather than actual face-to-face interactions it was the opportunity to interact face-to-face that was perceived to be valuable. The findings further highlight the importance of spontaneous interactions and the role they may play in the various collaborative behaviours delineated by Bedwell *et al.* (2012). As a result, a general approach of problematising reduced facetime in association with work arrangements that reduce individuals' presence at the office without any further explanation of what facetime actually means, is likely to provide inaccurate findings. Furthermore, FWA use led to risks of miscommunications and freewheeling, and delays in response times. The interpretations of teleworkers being out of reach and therefore out of touch in a similar way to part-time workers, partly reflects the limitations of electronic communication methods; however, they may also be explained by contextual features. In the following section I will further elaborate on the contextual features that were found to explain these findings.

5.4 Contextual features

A total of six sets of contextual features were found to influence the extent to which collaboration was affected by FWA use. In this section I will discuss each

set in the context of current literature. I will focus first on the team-level characteristics in the framework (Figure 4-1): team composition, task characteristics, temporal characteristics and structural characteristics. I will then discuss the individual level characteristics: individual proactive behaviours. Finally, I will discuss the top part of the framework – the environmental characteristics – and how the framework is nested within an environmental setting.

5.4.1 Team composition

This study found that when knowledge and skills were concentrated with certain team members, teams experienced greater difficulties in dealing with reduced passive facetime because of FWA use. This was a result of the increased need to consult with each other and ask questions because certain team members had more knowledge than others. Skill differentiation has been defined as the extent of concentration of specialised knowledge or capabilities in individual members which makes it hard to substitute them (Hollenbeck, Beersma and Schouten, 2012; Schaubroeck and Yu, 2017). Hollenbeck, Beersma and Schouten (2012) argued that skill differentiation was one of the defining characteristics of teams and referred to skill differentiation as broad differences in experience, education, knowledge or any other factors where differentiation may influence the capability of the team to conduct the work (through creating discontinuities and ambiguities within teams (Foster *et al.*, 2015)).

The role of skill differentiation is a matter of an ongoing discussion in the field of virtual teams. This discussion is focused on the limitations of electronic communication methods when team members have different levels of expertise or training (Schaubroeck and Yu, 2017). The argument is that members often find it difficult to articulate their thoughts or do not have the time or make the effort to follow through with electronic discussions to effectively resolve ambiguities, which is especially a problem when members have different levels of skills (Kurtzberg, 2014). Furthermore, tacit knowledge, which often accompanies skill differentiation, is difficult to convey by other methods than face-to-face (Schaubroeck and Yu, 2017). The need to rely on asynchronous

electronic communication in highly skill-differentiated teams therefore has the potential to affect team effectiveness, as a consequence of possible misinterpretations and the need to revisit tasks (Schaubroeck and Yu, 2017). The findings of this study resonate with this discussion as well as Bosch-Sijtsema *et al.*'s (2011) findings that asymmetry in team configuration, especially in terms of seniority and expertise, could be a hindrance to collaboration in remote work. As skill differentiation in teams produces greater need to consult with each other, the use of FWAs has more effects because of the reduced opportunities to interact that accompany their use.

5.4.2 Task characteristics

Two task-related features emerged in the cases as having an influence on how the use of FWAs impacts on collaboration: task complexity and goal clarity.

First, complex tasks were found to be more difficult to work on when a team had reduced passive facetime. This was reported to be a consequence of an increased need to interact, a more complex exchange of information and knowledge between team members and the limitations of doing so through electronic communication methods. These findings reaffirm the findings of previous studies on both FWAs and virtual work. These studies have suggested that more complex tasks should be worked on in a face-to-face setting due to the kind of knowledge exchanged and the sensemaking, convergent thinking and conceptual consensus required (Olson and Olson, 2000; Andres, 2002; Pérez Pérez, Martínez Sánchez, Carnicer and Jiménez, 2002; Oliver and Roos, 2003; Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011; Coenen and Kok, 2014). The rapid feedback and multiple cues enabled by face-to-face communication, are then argued to allow teams to unite on a collective interpretation in ambiguous or complex situations (Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011; Coenen and Kok, 2014). Increased or high levels of task complexity, which require resolving ambiguities and reaching conceptual consensus, have been associated with coordination and productivity decrements in virtual teams (Andres, 2002; Marlow, Lacerenza and Salas, 2017). Other studies have highlighted that communication technology use in

teams needs to match the collaboration needs of the team and that these needs vary according to team and task characteristics and requirements (Maruping and Agarwal, 2004; Malhotra and Majchrzak, 2014). These studies iterate the benefits of rich media in facilitating information and knowledge sharing, acquisition and integration, and resonate with media richness theory (Daft and Lengel, 1986). Visual cues that can be easily observed in face-to-face settings enable greater awareness of others in the team, a development of a shared understanding and a consensual solution, especially in complex task situations (Andres, 2002). Hence, the finding of task complexity influencing the relationship between FWA use and collaboration reaffirm the benefit of face-to-face interactions when dealing with complex and ambiguous tasks reported in previous work.

Second, I found that teams perceived it important to have a clear goal to work towards. These findings confirm the findings of Coenen and Kok (2014), who found sharing a common goal helped teams containing flexible workers deal with conflict. It also corroborates findings from research on virtual teams where goal-setting quality and commitment to goals have been found to positively impact on outcomes of virtual teams (Bell and Kozlowski, 2002; Forester, Thoms and Pinto, 2007). Virtual teams that have set goals at the start of their life cycle have been found to demonstrate increased cohesion and performance (Brahm and Kunze, 2012). Furthermore, Stark and Bierly (2009) found that goal clarity, referring to the extent to which performance expectations were clearly communicated, would result in increased virtual team satisfaction. Hence, the finding of goal clarity influencing the relationship between FWA use and collaboration reiterates the value of goal clarity set forth in previous work.

5.4.3 Temporal characteristics

Two temporal features emerged as influencing the extent to which FWA use impacts on collaboration within teams. The two features, temporal stability and task urgency, reflect the value of both developmental and episodic models of team effectiveness (Marks, Mathieu and Zaccaro, 2001; Ilgen, Hollenbeck, Johnson and Jundt, 2005).

First, teams with high levels of temporal stability, where team members had worked together for some time and expected to continue to work together (Hollenbeck, Beersma and Schouten, 2012), were found to more easily adapt to reduced passive facetime as a result of FWA use. As they had a shared history of working together, they had developed good connections, knew each other well, understood each other's personal situation and managed to work around the absence of members because of their flexible working. These findings affirm the findings from studies that have shown that relationships more easily adjust to FWA use when they are characterised by trust (Golden and Raghuram, 2010) or when employees had established personal relationships (Dimitrova, 2003; Coenen and Kok, 2014). Temporal stability was proposed by Hollenbeck, Beersma and Schouten (2012) as one of the key defining dimensions of teams. It reflects developmental models of team effectiveness where teams are suggested to evolve over time (Ilgen, Hollenbeck, Johnson and Jundt, 2005). Empirical research on virtual teams has also found support for such claims. As such, long-term virtual teams, where members have developed more knowledge and familiarity about other members and built relationships, team identity and ties to the team, have been found to communicate and sort out differences more effectively than short-term teams (Ganesh and Gupta, 2010; Ortiz de Guinea, Webster and Staples, 2012). Improved connections have then been found to result in improved team member satisfaction and willingness to work towards the collective needs and goals of the team (Wiesenfeld, Raghuram and Garud, 2001) and improve knowledge sharing (Golden and Raghuram, 2010). Furthermore, such teams are also more likely to have developed shared knowledge over time, for example of a product, processes or domain, enabling them to better collaborate when faced with reduced facetime (Espinosa, Slaughter, Kraut and Herbsleb, 2007). As members gain experience in working together and team members' familiarity increases, they have been found to better deal with barriers posed by electronic communication, as they develop shared understandings. This then facilitates more effective communication as well as helps them manage the absence of communication (Schaubroeck and Yu, 2017). The findings of the current study affirm that

temporal stability is also important in teams containing flexible workers as it is in virtual teams.

Second, I found that at certain moments, tasks may require more interaction and collaboration between team members – there was task urgency. This observation illustrates the importance of an episodic approach to team effectiveness and that the importance of collaboration opportunities may be different at different times during performance episodes of teams (Marks, Mathieu and Zaccaro, 2001). Maruping and Agarwal (2004) emphasised the importance of fit between communication technologies used and the types of interpersonal processes teams would need to engage in at a given point in time. For example, face-to-face interactions have been suggested to be most critical at the beginning of a project to establish ties in teams, especially if they are faced with reduced facetime, and to allow teams in the early stages of development richer media to develop connections and trust (e.g. Coenen and Kok, 2014; Maruping and Agarwal, 2004). This study advances this discussion by suggesting that at various moments in task execution, depending on the nature of the task, teams may benefit from more passive facetime in order to effectively deal with issues.

5.4.4 Structural characteristics

Structural characteristics of teams can refer to various structural features; however, this study highlighted that four features influenced the relationship between FWA use and collaboration: regular face-to-face meetings, frequency of absence, predictability of absence and synchronisation of presence.

I found that regular face-to-face meetings were regarded as valuable in discussing issues and keeping the team aligned. These findings confirm the findings of numerous other studies that have discussed the benefits of face-to-face meetings, particularly at important times of a project, to foster knowledge and information exchange (Duxbury and Neufeld, 1999; Golden, 2007; Golden and Raghuram, 2010; Coenen and Kok, 2014; Vayre and Pignault, 2014; Sewell and Taskin, 2015). Managers have also reported face-to-face meetings to be important to facilitate knowledge transfer amongst employees when some

of them work remotely (Richardson and Kelliher, 2015; Karis, Wildman and Mané, 2016). Within the context of software development, such meetings have been reported to enable an understanding and overview of others and their activities, and provide an opportunity to discuss and solve problems (Stray, Sjøberg and Dybå, 2016).

The other structural features, i.e. frequency of absence, predictability of absence and synchronisation of presence, clarify what makes collaboration within teams containing flexible workers distinct from collaboration in virtual teams – the opportunities team members have to collaborate face-to-face. These features suggest that reduced passive facetime can be managed and a certain level of structure can reduce ambiguities and minimise issues; of these three, frequency of use is the aspect of FWAs that has received the most attention in the literature. Numerous studies on individual teleworkers have suggested the frequency of use to be an important variable when considering the impact on other actors in the environment (e.g. Coenen and Kok, 2014; Golden, 2007). Some scholars have suggested that limiting the frequency of use has the potential to allow teleworkers sufficient opportunity to communicate and collaborate (Duxbury and Neufeld, 1999; Baruch, 2000; Donnelly, 2006; Wilton, Páez and Scott, 2011; Windeler, Chudoba and Sundrup, 2017). This study confirms that the implications of FWA use on collaboration are dependent on frequency of use. Based on the study findings, the absence of flexible workers from an office should not be too frequent in order to minimise negative effects on collaboration, ideally keeping facetime at the office to four days a week. This provides team members with a sufficient amount of passive facetime and opportunities for interaction.

Furthermore, the current study found the predictability of individual team members' presence to be important to collaboration. This would minimise confusion or frustration among other members in the team and enable team members and the team as a whole to adjust work processes to absences of flexible workers. These findings provide further support for suggestions made in studies undertaken at an individual level (ten Brummelhuis, Haar and van der

Lippe, 2010; Fogarty, Scott and Williams, 2011), that increased formalisation, such as always teleworking the same days every week, can minimise the adverse impact on co-workers, as this reduces ambiguity regarding when and where teleworkers are working (Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011; Sewell and Taskin, 2015). My findings further advance this discussion, by suggesting predictability of presence may minimise negative effects on collaboration because team members are able to predict each other's working patterns, plan around them and are therefore less likely to have to wait with issues. Therefore, clarity and transparency regarding hours of presence in the office minimise the negative effects of FWA use on collaboration within teams.

However, synchronisation of presence has received considerably less attention in the literature. In this study, team members found it important that presence at the office was synchronised to ensure that on certain days of the week all team members were present to be able to consult with each other if needed. This advances Perlow's (1999) and Van Dyne, Kossek and Lobel's (2007) suggestions that effective use of time in a group requires synchronisation of individual and interactive activities (depending on group needs) to minimise constant interruptions. Rather than just planning moments of collaboration and moments of individual work, as suggested in Perlow's (1999) study, the findings of the current study underline the importance of synchronising presence, so that on certain days of the week all team members are passively present. This is the same logic as maintaining a certain level of core hours, as the organisations reported on here did, with the purpose of maximising opportunities for informal face-to-face collaboration while still enabling individuals to enjoy personal benefits derived from FWA use. This study therefore contributes that team-level implications of FWAs are, in part, dependent on synchronisation of the presence of team members.

Furthermore, this study makes a contribution by outlining how all three structural characteristics, frequency, synchronisation and predictability, should be considered when understanding the impact of FWA use on collaboration.

Currently, studies have mostly focused on reducing frequency of use or increasing face-to-face interactions (e.g. Golden, 2007). Studies arguing for predictability mostly do so in relation to formalisation of practices (Fogarty, Scott and Williams, 2011). My study contributes that not one aspect but a combination of limiting frequencies, ensuring predictability and synchronisation of presence among team members, is likely to minimise the impact on collaboration. The value of passive facetime found in this study bridges the findings of studies that on the one hand suggest reducing frequency of FWA use and on the other hand that regularity of use would minimise the consequences of the practice. Rather than focusing on frequency or predictability, this study demonstrates the benefits of structuring and ensuring sufficient passive facetime in the team – depending on the task, the team and its contextual setting. While in some settings structuring interaction rituals may be important (Lawrence and Corwin, 2003), in others it is the non-structured *ad hoc* interactions that are of most value to collaboration, as is the case in the current study.

5.4.5 Individual proactive behaviours

The study also found that, at the individual level, individual proactive behaviours influenced the relationship between FWA use and collaboration. This finding reflects that, while enjoying the benefits of working flexibly, it is important that individuals remain aware of the implications of this flexibility on other team members.

Proactive behaviours have been defined as a “self-initiated, anticipatory action that aims to change and improve the situation or oneself” (Parker and Collins, 2008, p.635). Proactive behaviours include actively seeking help or offering help when needed and creating opportunities to interact and connect with co-workers (Farrell and Strauss, 2013). Proactive behaviours involve anticipation, planning and action and as employees anticipate possible implications of work arrangements such as FWAs on others; they may plan and take action accordingly to minimise unfairness perceptions, downplay differences and manage workloads and demands (Rousseau, Ho and Greenberg, 2006).

In describing the effect on team coordination, Van Dyne, Kossek and Lobel (2007) defined individual proactive availability as being available for key events and rituals as well as anticipating, initiating and coordinating work with team members (Corwin, Lawrence and Frost, 2000; Lawrence and Corwin, 2003). The current study confirms the importance of proactive availability but advances it by delineating that proactive responsibility is also important. In particular, flexible workers should not only be available to their co-workers but also show responsibility by ensuring that the implications of their work arrangements on others is minimised. By transferring work and informing fellow team members about work, if needed, considering the team when timing their absence if possible and informing team members about their absence ahead of time they can minimise the impact their work arrangement has on other members of the team. This also builds upon Lee *et al.*'s (2002) study that found part-time workers to use various strategies to make the arrangement work, including being proactively responsible by adjusting their personal life to work when necessary, making sure their arrangement would not have consequences for others, and ensuring priorities are met and tasks delegated.

5.4.6 Environmental characteristics

A final important feature impacting on the relationship between FWA use and collaboration is the environment in which the team is situated. In this study, the organisational context was the primary environmental characteristic that influenced the relationship between FWA use and collaboration.

The three organisations studied had all expressed interest in FWAs; however, none of them had implemented FWAs formally. In Polaris, which had the greatest use of FWAs of the three organisations, teleworking had emerged over time as an accepted way of working but flexible working hours were still restricted due to a clocking-in system in place. In Orion and Libra, teleworking remained restricted because of management belief in the value of collaborating face-to-face. The amount of part-time workers in the organisations reflected government mandates that organisations should accommodate requests for part-time work, as well as a national culture of acceptance of such work

arrangements. All three organisations were therefore following an accommodation model (Perlow and Kelly, 2014), where FWAs were implemented to accommodate employees' wishes. This study therefore adds to a group of studies, which seem to reflect organisational contexts that implement FWAs with the purpose of accommodating certain employee wishes and needs rather than offering FWAs openly and equally to all employees (Taskin and Edwards, 2007; Lautsch, Kossek and Eaton, 2009; Wilton, Páez and Scott, 2011; Teasdale, 2013). I suggest three implications of this contextual setting on the findings presented here.

First, in a different organisational setting, where a cultural shift has accompanied FWA implementation, the same value may not be placed on face-to-face collaboration as was observed here. This is particularly important because in such contexts a team-level effect of part-time work on the one hand and of telework and flexible working hours on the other, may be different. As such, teams may have become accustomed to virtual collaboration efforts and teleworkers may therefore be less likely to be perceived as "absent" in a similar way to part-time workers. Second, the organisations studied had traditional communication tools in place such as messengers but more advanced technologies were not available, reportedly because they had not seen a need for them. This is likely to play a role as previous studies have emphasised the importance of having the relevant technology as well as technology support in place to enable employees to communicate with each other (Watson-Fritz, Narisimhan and Hyeun-Suk, 1998; Baruch, 2000; Golden and Raghuram, 2010; Coenen and Kok, 2014). Advanced communication and collaboration technologies accompanied by education on their useability therefore has the potential to support collaboration in the absence of face-to-face presence. This is especially the case if these technologies have the ability to recreate a sense of passive facetime in the team (although this is context-dependent) (Karis, Wildman and Mané, 2016). Third, the findings presented here may be reflective of deeply rooted assumptions of physical proximity to be key to effective collaboration and of subjective distance that may be created between team members when they are absent (Wilson *et al.*, 2008). Some scholars have

proposed that value put on physical proximity does not necessarily translate to feelings of closeness or accessibility in the team but may rather be a result of habit or familiarity (Lee, Shin and Higa, 2007; Wilson *et al.*, 2008). Therefore, facetime may be experienced and enacted differently in different organisational contexts as they are affected by social structures and norms in the organisation, and may therefore be socially constructed (Birnholtz, Dixon and Hancock, 2012). However, face-to-face presence for a full workweek is still considered the norm in many organisations, which explains feelings of marginalisation of part-time workers. Such norms may play a significant role in this study.

5.5 A theoretical framework of the impact of FWA use

The findings presented in previous sections are put forth in a theoretical framework, which is based on Bedwell *et al.*'s (2012) framework of collaboration (see Figure 4-1 and Figure 5-1). The purpose of my study and the framework is to explain how the use of FWA impacts on collaboration within teams and what features explain how and when this happens.

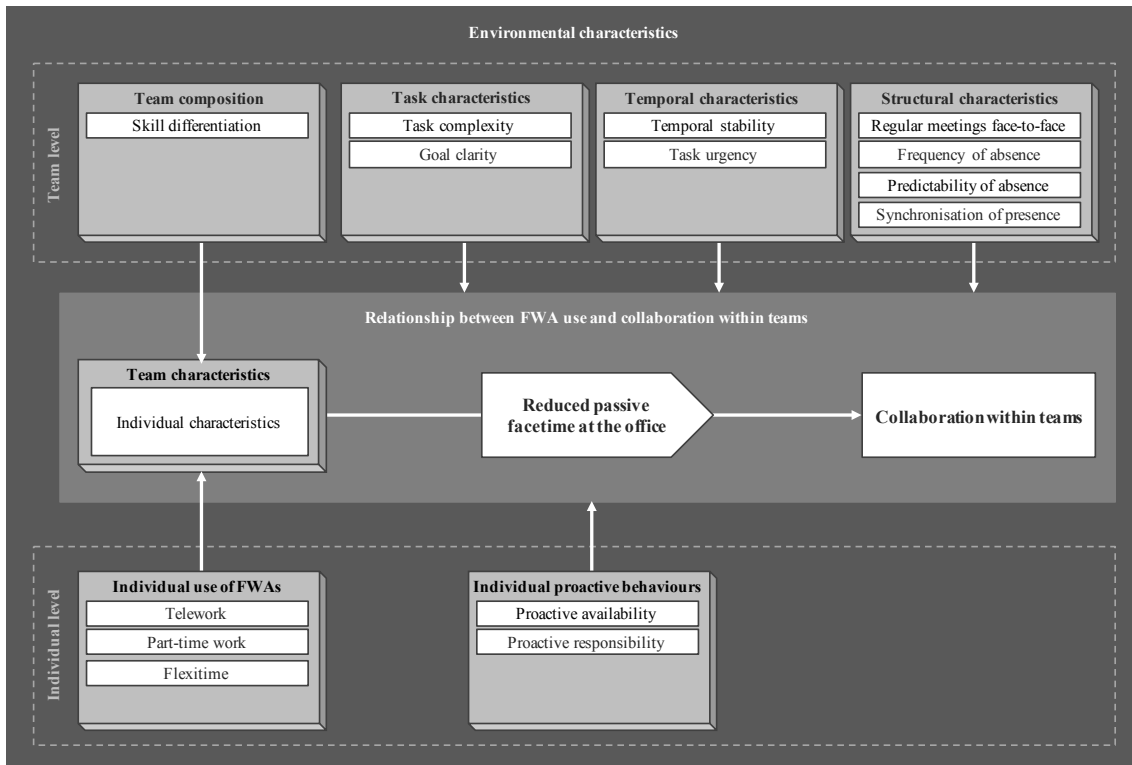


Figure 5-1- Theoretical framework

The mid-section of the multi-level framework highlights the relationship that is the focus of this thesis. It shows how individual FWA use affects team characteristics and when such teams need to collaborate, their collaboration efforts are affected because of reduced passive facetime in the team. A key contribution of this study is the outlining of this mechanism, especially the importance of *passive* facetime rather than face-to-face interactions and how passive facetime was interpreted as both a demonstration of availability and as an enabler of informal collaboration. The purpose of this study was not to explore the content of collaboration in itself and the various emergent states and collaborative behaviours it encompasses (Bedwell *et al.*, 2012), rather, in line with the social constructionist approach taken, I sought to understand how collaboration, as the respondents understood it, was affected by FWA use. However, the importance of informal *ad hoc* collaboration that emerged in the teams studied suggests that FWA use may have a more negative effect on collaborative behaviours that depend more upon *ad hoc* interactions, such as sensemaking, extra role behaviours and adaptive behaviours.

The framework further outlines six sets of contextual features that determine the strength of the relationship outlined in the mid-section of Figure 5-1. Four of these are at the level of the team. First, team composition (in particular, the level of skill differentiation) influences team characteristics. I propose that teams with high levels of skill differentiation may suffer a more detrimental effect on collaboration as a result of individual FWA use. Second, the task characteristics found to matter to the relationship between FWA use and collaboration were task complexity and goal clarity. When tasks are complex teams may suffer more from reduced passive facetime (as they need more of it) and when goals are clear they may more easily be able to work around reduced passive facetime (they may need less of it). Third, temporal characteristics that influence the relationship were temporal stability and task urgency. Teams high in temporal stability were found to more easily adapt to reduced passive facetime, hence the impact of FWA use on collaboration was less detrimental. Teams faced with task urgencies needed more facetime, hence the impact of FWA use on collaboration was more detrimental at high levels of task urgency. Fourth, structural characteristics included regular face-to-face meetings; these mitigated the negative relationship between FWA use and collaboration by aligning team members and providing opportunities for formal collaboration. Three other structural characteristics constitute a contribution to theory on FWAs by outlining how the collective impact of FWA use can be minimised: frequency of absences, predictability of absences and synchronisation of presence of team members. All three are proposed to impact on the relationship, so that when frequency of absences are minimised, absences are regular and predictable and the physical presence of team members is synchronised, a maximum of opportunities of collaboration is ensured. Hence, the relationship between FWA use and collaboration is mitigated.

One set of features was at the individual level as the behaviours of individual flexible workers were found to impact on the extent to which FWA use had a negative impact on collaboration. In particular, the proactive availability and the proactive responsibility of flexible workers, in terms of timing their absences and

informing others of the implications of their work, was reported to mitigate the relationship between FWA use and collaboration.

Finally, at the organisational level, I found that environmental characteristics, in particular the organisational cultural context, underpinned the entire framework. In other words, the framework is nested within a particular organisational context. When FWA use is adopted as an accommodation for a selected few it is likely to exacerbate any negative effects because of increased risks of interpersonal issues and frustration (Wilton, Páez and Scott, 2011). However, when it is equally available for all employees and accompanied by an organisational cultural shift, any issues are likely to be minimised (Perlow and Kelly, 2014).

The theoretical framework is built on Bedwell *et al.*'s (2012) framework of collaborative performance and the findings of this study. The framework highlights how individual, team and organisational-level features influence the relationship between individual FWAs and collaboration. The framework is grounded in the social information processing perspective (Salancik and Pfeffer, 1978) as it demonstrates how the impact of FWAs is not predetermined but rather is dependent upon individual team members' interpretations and how they make sense of their social work environment, cultural factors and norms. The contextual features therefore impact on reactions and interpretations and FWA use may have a different impact in different contextual settings because of how individuals make sense of their environment, including other team members' reactions and behaviours.

The framework constitutes a contribution to theory on FWAs by theorising the external influence of the practice on co-workers and teams, in particular when these are highly interdependent and need to collaborate. The framework can therefore be extended to different levels of analysis, such as dyadic relationships between co-workers, as well as to various different contexts different from the one studied here (e.g. health care, production work, education) in order to determine the impact of FWA use to other individuals in the organisation.

The framework also constitutes a contribution to the literature on collaboration as it applies and extends Bedwell *et al.*'s (2012) framework. As such it demonstrates how an individual HR practice has an influence beyond the individual self. The framework may apply to other types of individual HR practices, such as I-deals, defined as deals negotiated by individual workers with terms that differ from the standard employment conditions (e.g. other types of work-life initiatives or developmental opportunities) (Rousseau, Ho and Greenberg, 2006). It further extends Bedwell *et al.*'s (2012) framework by highlighting the nestedness of the framework in an environmental setting, and how this determines the impact of FWAs on collaboration as well as the influence of the other characteristics. For example, if an organisation is characterised by a crisis mentality and facetime is equated to commitment and productivity, structuring presence and absence may produce limited benefits as a full-time presence would be what is expected.

As I outlined in section 2.3.3, FWA use in teams shares some similarities with work conducted in virtual teams. Some of the contextual features found to influence the relationship between FWA use and collaboration affirm these similarities, as several features (e.g. temporal stability, task complexity, skill differentiation) have been reported to be a critical consideration in the field of virtual teams (as well as the literature on teams in general). However, in contrast to virtual teams, the teams studied had low frequencies of telework and part-time work and limited use of flexible working hours and all teams therefore had significant amounts of facetime. In addition, the teams did not rely heavily on electronic communication and members were not geographically dispersed. Regardless, the value of passive facetime found in this study may have relevance to the field of virtual teams. As such, virtual teams may benefit more from opportunities to interact than from formal meetings. Therefore, management and team leaders in virtual teams should be aware of the benefits of passive facetime and try to enable it through collaboration technologies or through the organising of regular moments where the team can work face-to-face.

The framework demonstrates that organisations that rely heavily on collaboration need to be aware that individual differences in work practices may have effects on collaboration efforts and how different contextual features determine how this happens. In addition, various other possible pathways may be explored within the framework, such as relationships between various contextual features and how their combination affects the experience of FWA use. Therefore, the framework can be used as a base upon which to build more advanced multi-directional relationships and models. Some of the possible directions such research could take will be presented in section 6.9.

5.5.1 Other possible (absent) influencing features

Several other features may influence the framework and are worthy of discussion, although they did not specifically emerge from the study. These were the work setting of software development, the role of supervisors and the impact of gender.

5.5.1.1 Software development setting

Not only the organisational context but also the industry and occupational context influences how FWAs are experienced (e.g. Boell, Cecez-Kecmanovic and Campbell, 2016). The setting of this study was software development – more precisely agile software development, which is likely to have some influence on study findings.

In general, software development tasks are highly interdependent and uncertain in nature and require significant collaboration and interactions between team members. Several scholars have highlighted the importance of unplanned, informal and casual interactions in successful software development as they provide opportunities to deal with uncertainty through exchanging experiences and information, reviewing code, asking questions and problem-solving (Perry, Staudenmayer and Votta, 1994; Kraut and Streeter, 1995; Cramton and Webber, 2005) Perhaps reflecting a value put on unplanned interactions, significant benefits have been reported of collocation in software development as it allows for interactive continuous communication, awareness of others'

activities, overhearing, team building, problem solving and learning, which outweigh liabilities such as interruptions (Teasley, Covi, Krishnan and Olson, 2002). Furthermore, agile software development methods are characterised by even more extensive collaboration and small, closely knit, self-organised and highly interactive teams (Inayat and Salim, 2015). In agile software development methods emphasis is put on communication of changes and new tasks, the awareness of work progress of others and helping behaviours and collaboration is encouraged throughout the development process (Inayat and Salim, 2015).

This study was conducted within software development teams and does not allow for inferences to be made to other types of teams or work contexts. The particularly high value of unplanned interactions in agile software development may explain why reduced *passive* facetime emerged as the mechanism that explains an impact on collaboration. Therefore, FWAs may have different effects for other types of teams or collaborative efforts in different contexts (Chung, 2017). The applicability of the framework to other types of work should be examined in future studies.

5.5.1.2 Supervisors

Numerous studies on flexible work have highlighted the role of supervisors and supervisory attitudes in the way teams or work units adapt to and appropriate FWA use (see section 2.4.7.2). Supervisors play an important role in the allocation of FWA use (e.g. Sweet, Pitt-Catsoupes and Boone James, 2017) as well as in the way it is enacted in the organisation (Kossek *et al.*, 2016). Furthermore, supervisors' rationales have been found to be connected to the characteristics of their organisational context. As such, in embracing contexts the same managerial rationales may be used in supportive ways (where there is both cultural and structural support) while in ambivalent contexts they may be used in less supportive ways (Kossek *et al.*, 2016). Although supervisors have been found to play an important role in the literature to date, they did not emerge from the dataset as an important influence. This may in part be explained by the non-hierarchical nature and self-organising nature of agile

software development (Inayat and Salim, 2015). However, it is possible that in other types of teams, supervisors may play a greater role. This is worthy of further examination in future studies.

5.5.1.3 Gender

A final factor worthy of mention is the role of gender, which has been a subject of ongoing interest in research on FWAs and other work-life initiatives. As a work-life initiative implemented to enable employees to better balance work and family obligations, FWAs are often considered to be a gendered policy – a policy designed for mothers with caregiving responsibilities (Atkinson and Hall, 2009; Teasdale, 2013). This has been supported by studies such as Leslie *et al.* (2012), which found that employers are more likely to believe FWAs are used for family-friendly purposes when women use them. A report published in 2017, stated that flexible working may be “enforcing traditional gender roles in the division of labour rather than equalising it” (Chung, 2017, p.13).

However, in this study, 90% of team members interviewed and all members of management were male. This is likely to reflect the work context, namely software development, which is known to be a male-dominated profession (Ben, 2007). However, the acceptance of FWAs observed in the male-dominated teams is likely to reflect the national context in which the study was conducted. In the Netherlands, among other countries, teleworkers have been found to be more likely to be men than women (Eurofound and the International Labour Office, 2017) and part-time work is more common in The Netherlands than in many other European countries, also among men (Eurostat, 2016) (for further information see section 4.2.1). Therefore both practices are very common and accepted among both women and men, resulting in a general acceptance of the practice regardless of gender. However, had the teams contained more females different dynamics may have emerged, in particular if it would not have been possible for all to negotiate the level of flexibility needed. FWAs are often targeted towards women as they frequently assume the caregiving role in the household (Perlow and Kelly, 2014). Therefore, their need for flexibility may be greater as well as their frustration if they are not able to negotiate the flexibility

they need while other team members can, possibly resulting in different dynamics emerging in the teams and enhanced likelihood of justice issues emerging. It can also be speculated, while assuming women to be the caregivers in their families, that their ability to accommodate to the teams needs, e.g. by being proactively available, may have been less than what was observed in the teams studied here.

In any case, this study does not provide concrete insights into differences in perceptions and experiences between men and women as the study demonstrates a predominantly male perspective on the implications of FWA use on collaboration within teams.

5.6 Chapter summary

In this chapter I have positioned study findings within current literature. I have outlined how FWA use impacts on collaboration through reduced passive facetime and how passive facetime was interpreted as availability to other members as well as an enabler to collaboration. I have outlined six sets of contextual features that impact on this relationship. I presented a theoretical framework on how individual FWA use impacts on collaboration and discussed it in connection with the theories underpinning the research. I have also discussed other possible features that did not emerge from the data but have received attention in the literature, and therefore may have an impact on the framework.

6 CONCLUSION

6.1 Chapter introduction

In this chapter I summarise the thesis by outlining the status of current research (section 6.2), highlighting the findings and implications of the exploratory study (section 6.3) and the findings of the main study (section 6.4). I then discuss how the theories inform study findings (6.5), the contributions of this thesis and suggest future research avenues (6.6). In section (6.7) I review the implications for practice and in section 6.8. I discuss the limitations of the study. I finalise the thesis by making final concluding remarks (6.9).

6.2 Status of current research

An initial step in determining a research question was conducting a review of the literature and synthesising studies that had explored the impact of FWA use on collaboration within workplaces. The review found no work that had looked at the relationship between individual FWA use and collaboration. However, a total of 67 studies were identified to have explored the impact of FWA use on co-workers and work units and various aspects of interactions, attitudes, behaviours and relationships within organisations, which underpin collaboration.

The review revealed that the majority of current research focuses on telework but significantly fewer studies study the implications of part-time work and flexible working hours. In addition, the majority of the studies use flexible workers themselves as the sample. These studies reveal that teleworkers find it difficult to maintain their identity and legitimacy within the organisation. Teleworkers were reported to attempt to deal with such issues by increasing their presence but also to make use of the possibilities of electronic communication when face-to-face interactions were not possible. The significantly fewer studies exploring the experiences of co-workers who work with teleworkers reported mostly adverse reactions and frustrations, and suggested that these may be minimised through formalisation, transparency and limiting frequency of use of telework. Studies exploring the implications of flexible working hours suggested irregularities in working hours can result in

negative reactions from co-workers. Studies on part-time work suggest that co-workers find that part-time work disrupts the workflow in the organisation and that part-time workers experience marginalisation.

In addition, analysis of the evidence base revealed that current research is largely focused on higher frequency teleworkers, although the benefits of a lower frequencies of use are increasingly acknowledged. Current research has not recognised the impact of different patterns of part-time work and flexible working hours. Extant research also largely reflects organisational contexts in which flexible working (especially telework and part-time work) is not embraced as a normal way of working, which gives rise to social legitimacy problems, marginalisation and frustrations. Finally, the review found that interdependence is rarely addressed in current research, yet when tasks require intense collaboration between employees, teleworking is likely to have a more negative effect. Complex tasks require more knowledge sharing and teleworking is seen to be especially problematic where there is a need to share tacit knowledge.

Review findings suggested more work is needed to understand how FWA use impacts on collaboration within interdependent teams and how contextual features explain how this happens.

6.3 Implications of exploratory study findings

Since current research provided general insights into relationships, attitudes, behaviours and interactions between flexible workers and other employees, an exploratory study was conducted in order to explore whether inferences made from the review did apply to interdependent teams needing extensive collaboration. The exploratory study further allowed me to draw out and compare key issues experienced in practice with issues highlighted by current research. The research question that guided the exploratory study was: “How does the use of FWAs impact on teams?” The study consisted of semi-structured interviews with seven flexible working consultants.

The study highlighted two factors that guided the research question and design of the main study. First, the consultants did not consider reduced facetime to be

a critical issue when it came to FWA use in teams but argued that facetime could be managed through planning and organisation of meetings and events. This is contrary to claims made in the current literature and raises the question of whether facetime and frequent face-to-face interactions are indeed as essential as is currently suggested by the literature. Second, the consultants found that the implementation of FWAs, such as the involvement of employees and whether the practice was available to all or to a selected few, played an important role in how it was impacting on the team. They further emphasised the role of trust within the team as well as the role of supervisors' attitudes and behaviours in determining an impact on teams. These key findings of the exploratory study raised questions regarding the role of the contextual features that determine the impact of FWA use and the need to further explore and understand the need for and importance of facetime.

6.4 Main study findings

The main study was a multiple case study conducted in seven software development teams in The Netherlands and Belgium. The study sought to answer the research questions of how FWA use impacts on collaboration within teams and what contextual features may explain this relationship. The study was primarily based on interviews with team members but observations of team meetings and office spaces, and interviews with management provided contextual insights.

The study revealed that the impact of FWA use affected collaboration through reduced passive facetime. Passive facetime of team members was experienced as providing opportunities for *ad hoc* informal collaboration and consultation between team members, which was the primary method of collaboration in all teams. Passive facetime served as an impression management technique – staying visible to others – but, more importantly, was also interpreted as an enabler to collaboration. The impact of reduced passive facetime as a result of FWA use was reported to be delays in response times, risk of miscommunications and risk of freewheeling. However, not all teams experienced the impact of FWA use on collaboration in the same way. Six sets

of contextual features were identified which either amplified or mitigated the negative relationship between FWA use, passive facetime and collaboration. At the team-level, these included skill differentiation as a team compositional characteristic, task complexity and clarity of goals as task characteristics, temporal stability and task urgency as temporal characteristics, and regular face-to-face meetings, frequency of absence, predictability of absence and synchronisation of presence as structural characteristics. At the individual level, individual flexible workers' proactive behaviours included proactive availability and proactive responsibility. Finally, environmental characteristics are also proposed to influence the framework, as the whole framework is nested within an organisational context with particular characteristics and culture.

6.5 Theoretical grounding

Two theories were presented in Chapter 1.4, which provided a theoretical rationale for the research question that guided the study. I will now return to these to summarise how they inform the study's findings.

The study was informed by the social information processing perspective (Salancik and Pfeffer, 1978) and study findings also support its relevance. The framework illustrates how individual FWA use has an impact on flexible workers' social environment, the team, and the experiences and sensemaking of other team members as well as flexible workers themselves. The extent of this impact is dependent on various contextual features and characteristics of the social environment, the task itself, structural, temporal and social features as well as the broader organisational norms and cultural features in the teams' environment. Therefore the framework illustrates how the impact of individual FWA use is not a given but rather derived from a combination of multiple layers – individuals within teams within organisations situated in broader environmental contexts.

The finding that FWA use impacts on collaboration through reduced passive facetime provides support for media richness theory (Daft and Lengel, 1986) and that face-to-face interactions are perceived to be the richest media within interdependent work settings. The passive facetime of team members was

perceived as a critical factor in enabling face-to-face interactions and other ways of communicating were seen as inferior, due to their lack of richness.

6.6 Contributions to theory

This study is the first study to my knowledge that explores the impact of FWA use on collaboration within teams. As such it makes three primary contributions to literature.

6.6.1 Passive facetime

One primary contribution is the delineation of passive facetime as the mechanism through which FWA use impacts on collaboration. Previous studies on the impact of FWAs on co-workers have implicitly and explicitly considered reduced facetime to be the main challenge that results from FWA use (e.g. Van Dyne, Kossek and Lobel, 2007; Golden and Raghuram, 2010). However, the meaning of facetime is rarely clearly articulated as it may refer to presence (to enable flexible workers' participation in social interactions with co-workers and others), or to actual face-to-face interactions or visibility at work, often for impression management purposes (Felstead, Jewson and Walters, 2003; Lawrence and Corwin, 2003; Van Dyne, Kossek and Lobel, 2007). This study has contributed by outlining how FWA use impacts on collaboration through reduced passive facetime. It affirms studies that have reported facetime to be a display behaviour and discussed strategic self-presentation of flexible workers to enhance their visibility and perceived availability (Felstead, Jewson and Walters, 2003; Halford, 2005; Lal and Dwivedi, 2009; Sewell and Taskin, 2015). However, it expands the current understanding of passive facetime to an understanding of passive facetime as an enabler of informal collaboration in teams. As such, it has contributed to the literature on FWAs by explaining that individual FWA use may be problematic to other employees because of reduced passive facetime – reduced opportunities to interact – rather than reduced face-to-face interactions *per se*. It advances the work of Van Dyne, Kossek and Lobel (2007) who argued that coordination losses as a result of reduced facetime in workgroups had to do with lower awareness because of a reduction in the quantity and quality of communication and the increased asynchrony of

communication. In this study, coordination losses were found to be a result of reduced opportunities to communicate, rather than actual communication. Furthermore, it advances the findings of Lawrence and Corwin (2003) by highlighting that it is not participation in interaction rituals that is key, but rather the opportunity to do so, as many interaction rituals are in fact informal. The interpretation of passive facetime as an enabler of collaboration also explains how all three practices were perceived similarly, as teleworkers were often perceived to be out of reach, although still working, mostly from their home. Passive facetime was perceived as availability and accessibility; hence, a lack of passive facetime effectively meant out of reach and out of touch.

6.6.2 Frequency, predictability and synchronisation of absence

A second contribution to the literature of FWAs is how frequency of absence, predictability of absence and synchronisation of presence were all reported to influence how FWA use affects collaboration within teams. Several studies on individual teleworkers have suggested the frequency of use to be an important variable when considering the impact on other actors (e.g. Golden, 2007; Coenen and Kok, 2014), and that limiting the frequency of use has the potential to allow teleworkers sufficient opportunity to communicate and collaborate (Duxbury and Neufeld, 1999; Baruch, 2000; Donnelly, 2006; Wilton, Páez and Scott, 2011; Windeler, Chudoba and Sundrup, 2017). This study confirms that frequency of use is an important consideration when determining the influence on collaboration. This applies to all types of FWAs, part-time work, telework and flexible working hours, equally, as the purpose is to ensure enough passive facetime for the collaborating entity.

In addition, predictability of presence is found to enable team members and the team as a whole to adjust work processes to the absences of flexible workers. These findings advance Fogarty, Scott and Williams' (2011) findings that increased formalisation, such as always teleworking the same days every week, can minimise the adverse impact on non-teleworking co-workers and that predictability reduces ambiguity on when and where teleworkers are working (Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki, 2011; Sewell and

Taskin, 2015). My findings suggest that predictability of presence is beneficial at the team-level as well and has the potential to minimise negative effects on collaboration because team members are able to predict each other's working patterns and are less likely to have to wait with issues. Therefore, clarity and transparency regarding hours of presence in the office minimise the negative effects of FWA use on collaboration within teams.

Finally, in this study team members found it important that presence at the office was synchronised to ensure that on certain days of the week all team members were present to be able to consult with each other if needed. This advances Perlow's (1999) and Van Dyne, Kossek and Lobel's (2007) suggestions that effective use of time in a group requires synchronisation of individual and interactive activities (depending on group needs) to minimise constant interruptions. Rather than just planning moments of collaboration and moments of individual work, as suggested in Perlow's (1999) study, the findings of the current study underline the importance of synchronising presence, so that on certain days of the week all team members are passively present. This is the same logic as maintaining a certain level of core hours, as the organisations reported on here did, with the purpose of maximising opportunities for informal face-to-face collaboration while still enabling individuals to enjoy personal benefits derived from FWA use. This study therefore contributes that team-level implications of FWAs are in part dependent on synchronisation of the presence of team members.

Taken together, the three factors suggest that reduced passive facetime can be managed and a certain level of structure can reduce ambiguities and minimise issues. Considering that passive facetime is the key mechanism that explains the impact of FWA use on collaboration, study findings suggest that the focus should not be on use but rather on ensuring sufficient passive facetime (presence). At the same time, teams should ensure predictability of absences and synchronisation of presence among team members, in order to allow team members to anticipate other team members' work patterns while providing them with enough opportunities to collaborate.

6.6.3 A theoretical framework of the collective impact of FWAs

A third contribution is the multi-level theoretical framework presented in Figure 4-1 and Figure 5-1. The framework constitutes a contribution to the literature on FWAs by illustrating how FWAs as an individual work arrangement can have an impact on the collective and how individual-, team- and organisational-level features impact on how this happens. While FWAs benefit individuals, these arrangements need to make sense for the team as well as the organisation as FWAs have a collective impact. The framework addresses a need for theorisation in the field of FWAs, which remains undertheorised and lacking theoretical bases that can unify research directions, explain conflicting findings and guide future research (e.g. Bélanger, Watson-Manheim and Swan, 2013). The framework highlights that facilitating practices are multi-level including both individual and team-level practices as Van Dyne, Kossek and Lobel (2007) suggested. However, my study advances Van Dyne, Kossek and Lobel (2007) by highlighting various additional contextual features that need to be considered, including task characteristics, temporal characteristics and team composition. It also advances Van Dyne, Kossek and Lobel's (2007) study by demonstrating that organising interactions is not sufficient as it is not the formal interactions that are missed but the opportunities to interact face-to-face – the opportunities to consult and ask questions. I therefore advance the current state of research by emphasising that it is team members' passive facetime that needs to be organised rather than face-to-face interactions as suggested by Lawrence and Corwin (2003), hence that the value is on the passive component rather than active presence.

This study also contributes to the literature on collaboration as it applies and extends Bedwell *et al.*'s (2012) framework of collaboration. The adapted framework demonstrates how an individual HR practice has an influence beyond the individual self and may be applied to other types of HR practices. It further extends Bedwell *et al.*'s (2012) framework as it highlights the overarching influence of environmental characteristics, and how the entire framework is nested within an environmental setting.

6.6.4 Secondary contributions

In addition, this study has made three secondary contributions. First, while the consultants interviewed in the exploratory study highlighted that facetime was not essential but could be managed and organised, the main study revealed that passive facetime was in fact very important to collaboration. The consultants therefore acknowledged the value of dynamic facetime, i.e. actual face-to-face interactions between employees, which can be organised and scheduled through, for example, meetings. However, they did not fully acknowledge the importance and value of passive facetime in collaboration, as is revealed in this study. This finding therefore makes a contribution to knowledge as it suggests that better education on the role of passive facetime in organisations to those assisting organisations in implementing FWAs, such as consultants, would be beneficial, in order to unleash the full potential of the practice. Second, the study has provided an additional dimension of proactive behaviours that should be encouraged amongst flexible workers. As such, it has highlighted the importance of proactive responsibility in addition to proactive availability (Lawrence and Corwin, 2003; Van Dyne, Kossek and Lobel, 2007). This emphasises the importance of flexible workers being considerate of other team members and acknowledging that they are a part of a team. By transferring work if needed and informing others of absences, they acknowledge and address the collective impact of their individual arrangement. Third, this study has also underlined the importance of considering that processes may be important at different times during performance episodes of teams (e.g. Marks, Mathieu and Zaccaro, 2001). While current work on virtual teams and FWAs (e.g. Coenen and Kok, 2014) has proposed face-to-face contact to be most critical at the initial stages of a task or team, this study has highlighted that passive facetime may be important at different moments, such as towards the end of a delivery, when there is urgency of some kind.

6.7 Implications for practice

FWAs is a contemporary issue that has gathered high levels of interest among practitioners as well as scholars. Based on the findings of this study, I make

several suggestions to organisations that seek to, or have already implemented, FWAs.

The findings of this study suggest that organisations should remain aware of the benefits of passive facetime – the mere physical co-presence of team members. Within interdependent contexts, such as teams, passive facetime seems to serve as an enabler to informal collaboration between team members. Although employees may sit at their desks all day without engaging in interactions, their mere presence benefits other employees because of the opportunities they have to consult with them. The value placed on passive facetime for collaboration suggests that organisations need to structure their tasks and teams so that collaboration opportunities are maximised; it also suggests that implementation of electronic communication methods without an intra-team discussion and training, may not help teams containing FWA users. In addition, this study outlines several contextual features, which can guide organisations that seek to implement FWAs. These features demonstrate that FWA use, proven to benefit individual employees, should not be disregarded as being detrimental to collaboration. Rather, individuals can be allowed to benefit from working flexibly when organisations carefully think through, design and manage FWA implementation, allowing them to get the best out of their employees.

Based on the findings of this study, I suggest that organisations need to ensure good knowledge management and cross training in the team to minimise issues of skill differentiation of team members. Organisations also need to consider the role of development over time, in particular that teams may adapt to FWAs differently, depending on how long they have worked together, and more facetime should be encouraged at critical and urgent times in a project to be able to deal with issues promptly and efficiently. Furthermore, organisations should be aware of the role of task characteristics, especially that facetime may be more important when dealing with complex tasks and that goal clarity aids team members in dealing with reduced facetime by keeping all eyes on the same goal.

Moreover, organisations should adopt structural measures to maximise collaboration opportunities in the teams. As such they should organise regular face-to-face meetings to keep the team aligned and able to deal with issues. They should also limit the frequency of FWA use (e.g. to 1-2 days a week) to ensure that teams have enough facetime and make sure FWA use is predictable so that team members know when other members are present at the office and when not. They should ensure that the presence of flexible workers is synchronised so that on certain days in the week all team members are present at the same time. Study findings also suggest that organisations should encourage proactive behaviours among flexible workers, particularly that they remain available to others should they need to reach them – especially when they are present at the office (and be available when away from it should emergencies arise). In addition, they should encourage proactive responsibility from flexible workers towards other team members, by ensuring they inform others of their work and its possible implications, consider the team's needs when choosing when they work flexibly, and consult with other members should they need to be absent. Similarly, co-workers should be more actively encouraged and trained in contacting teleworkers during their days working from home. Therefore they should also be encouraged to demonstrate proactive behaviours in reaching out to teleworkers although they may be physically absent from the workplace.

Finally, the findings of this study suggest that the organisation itself plays a critical role in how FWAs are experienced, through how FWAs are allocated to employees as well as the way organisations promote the practice among employees. Management buy-in and cultural endorsement are critical to FWA success.

6.8 Limitations

This study provides important insights that can guide organisations and future research. However, certain limitations should be acknowledged.

The first limitation of the current study is its four layered contextual setting. First, it was conducted in a national context, in which part-time work, in particular, is

widely accepted and has become normalised, which may impact on the experiences of the teams and limit the application of the findings to organisations in other countries. Second, the study was conducted in organisations that placed high value on facetime and had not adopted formal FWA programmes, although all were interested in FWAs. This organisational setting reflects certain organisational norms and values, and may limit the application of these findings to other contexts. Third, the study was conducted in a specific work context: software development teams. While software development teams are highly interdependent and involve collaborative work, the findings reported here may not be generalisable to other types of collaborative teams, given the specificity of software development. Fourth, the gender composition of the teams, presumably because of the work context of male-dominated software development, also limits applicability to more gender-diverse settings as different dynamics may have emerged in teams containing more females. The contextual setting of the seven cases studied may, therefore, limit the applicability of study findings to other settings.

A second limitation is the case study methodology. A case study approach carries a risk of researcher bias, transparency in procedures and limited replicability; however, these have been addressed throughout the research process to the extent possible. The small number of cases limits the possibility for generalisations beyond the teams studied here. In addition, this study provided a cross-sectional snapshot of a reality in the teams studied at a given point in time. As organisations, teams and individuals are constantly evolving and adapting to old and new realities, a longitudinal approach capturing team realities at different points in time could provide a more in-depth picture of the impact of FWAs.

6.9 Future research directions

Building upon the limitations outlined in the previous section, this study has highlighted several interesting future research avenues.

A first avenue for future research is a further exploration of the extent to which passive facetime is beneficial to collaboration in different contextual settings,

such as different types of occupations and teams. Such studies can further advance understanding of the collective implications of FWA use. They can also further expand knowledge of the construct of passive facetime by exploring what determines whether passive facetime is primarily experienced as an impression management tool for individual purposes or if it is perceived as a collaboration enabler. Future research on co-workers would also benefit from including passive facetime in study designs, in a similar way that face-to-face interactions have been studied to date, to understand how it impacts on relational dynamics within organisations.

A second avenue for future research is further examination of the role of frequency, predictability and synchronisation. Future studies would benefit from taking the focus of FWAs and exploring the notion of facetime (or physical presence) and the amount of facetime teams need to obtain the best possible performance. It would also be valuable to examine the impact of facetime at an individual level, by examining the impact of facetime on individual outcomes such as satisfaction and performance, as well as at the dyadic level, by examining the impact on co-workers. Another avenue for future research is to explore whether it matters which days of the workweek team members are absent, such as whether an absence of two days at separate times in the week (e.g. Monday and Thursday) would be different from absences of two days together (e.g. Thursday and Friday).

A third avenue for future research lies with the framework, which has the potential to guide future research on team-level effects of FWA use in teams, groups or work units with varying levels of interdependence, different tasks, a more diverse gender composition and in different kinds of organisational settings. Given the lack of group-level research of the implications of FWAs (Gajendran and Harrison, 2007), the framework can be further expanded and relationships empirically tested as this research domain matures. It can also serve to guide future research on collaboration, by examining the impact of other individual HR practices such as different types of I-deals. Therefore, the framework can serve as a basis of further research on the impact of HR

practices that benefit individuals but may not necessarily benefit other members in their organisation, especially when collaboration is needed between them.

Finally, the field would benefit from further studies on the proactive behaviours of flexible workers and the impact of those on co-workers, teams, workgroups and organisations. Such studies can determine whether encouraging and rewarding proactive availability and responsibility has a beneficial impact on other employees in organisations as well as on the flexible workers themselves. In addition, future research should pay further attention to the role of time when examining the impact of FWAs – especially the dynamic nature of task execution, as FWA use may have different effects at different times. This can be done by, for example, adopting longitudinal designs.

6.10 Thesis summary – Concluding remarks

In today's economy, the issue of always being available becomes greater every day with the emergence of technologies that enable constant connectivity to work. While such technologies should, by definition, also lead to an increase in flexible working, doubts still remain regarding how individual flexibility, such as discretion in hours and place of work, fits with work that requires collaborating with other individuals, especially in interdependent teams. In the literature on virtual teams there has been an ongoing discussion on whether the benefits of collocation and face-to-face interactions can be recreated by advanced communication technologies, with no consensus to date (e.g. Pyöriä, 2009; Gilson *et al.*, 2015; Karis, Wildman and Mané, 2016). O'Leary, Wilson and Metiu (2014, p.1236) suggested that "critical aspects of distributed work are socially constructed and symbolically laden", reflecting that facetime may be perceived essential in one context and unnecessary in another and that the need for it may therefore be socially constructed. The decision of large corporations to withdraw the option to telework, such as Yahoo and, more recently, IBM and the choice of progressive organisations such as Google and Facebook to emphasise a 40-hour a week facetime culture, may reflect a belief in the benefits of *ad hoc* hallway and cafeteria discussions (Cairns, 2013; Allen, Golden and Shockley, 2015). However, they may also reflect deeply-rooted

beliefs of individuals and organisations that work should be conducted at the office, full-time, especially if it involves collaboration with other employees (Wilson *et al.*, 2008; Perlow and Kelly, 2014; Gilson *et al.*, 2015). Such assumptions on the value of facetime are engrained in the organisational culture of many organisations and colour perceptions and understandings of FWAs and the implications of their use. The current study has explained how FWA use impacts on collaboration within teams, in organisations that have not undergone any adaptation or cultural transformation to incorporate flexible work into their organisational structure and culture (Perlow and Kelly, 2014). It has demonstrated that even in such contexts, FWA use does not negatively influence collaboration, given that numerous contextual features are addressed and taken into consideration.

Overall, FWAs are considered to carry distinct benefits to individuals by allowing them to have better control over their work and life obligations through permitting them to choose when, where and how long they work. Yet, such arrangements may have unintended consequences for other employees in the organisation, especially when they need to collaborate with each other. Passive facetime of team members enables face-to-face interactions, which remain the most efficient way to interact and collaborate regardless of technological advances (Rhoads, 2010). A balance needs to be created between the individual and collective interest, to the benefit of both. By outlining how the use of FWAs impacts on collaboration through reduced passive facetime and how individual, team and organisational-level features impact on this relationship, this study has suggested ways to achieve this balance.

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APPENDICES

Appendix A Definition and contextualisation of FWAs in reviewed studies

Table A-1 Appendix A Definition and contextualisation of FWAs in reviewed studies

Study	Methodology	FWA type discussed	Sample	Types of organisations sampled	Frequency of FWA use	Impact of various levels of frequency considered	Organisational context	Interdependence between co-workers considered
Baruch (2000)	Qualitative: 62 interviews	Telework	Teleworkers	Mixed (accountancy, insurance, telecom and government)	One-third full time, rest more than 2 days per week	Y (partly)	Five organisations that allow telework (different contexts)	N
Belanger and Allport (2008)	Case study: 20 interviews and survey (n=8 matched for pre and post telework implementation)	Telework	Teleworkers (managers for background)	Insurance	Full-time	N	Department with all full-time teleworkers	Y
Belanger and Watson-Manheim (2006)	Two case studies: 30 interviews	Telework and distributed work	Teleworkers	IT	No information	N	One highly distributed environment and one where employees can telework but culture is one of being always available to the customer	Y
Belanger, Webb Collins and Cheney (2001)	Mixed methods: Interviews and surveys (n=119)	Telework	Teleworkers (office workers for network analysis and managers for background)	Mixed (Banking, insurance, IT and training)	More than one day a week (various frequencies)	N	Various - workgroups with a mix of teleworkers and office workers, in most cases opportunity to telework was at manager discretion	Y
Bentley <i>et al.</i> (2016)	Quantitative: survey (n=804)	Telework	Teleworkers	Various (high degree of knowledge work)	63% less than 7 hours a week, the rest more than that	Y	Organisations with some use of telework, mostly negotiated <i>ad hoc</i> with managers (77% of participants)	N
Bosch-Sijtsema, Fruchter, Vartiainen and Ruohomaki (2011)	Eight case studies: 35 interviews, observations and surveys (n=83)	Telework and distributed work	Teleworkers, distributed workers and office workers	Technology	Full-time	N	Teams with high levels of distribution and/or telework	Y
Brocklehurst (2001)	Case study: 30 interviews (15 pre and 15 post telework implementation),	Telework	Teleworkers, office workers and managers	Computer manufacturer	Full-time	N	Results-oriented, high-trust organisation - a workgroup where all except administrative workers and	N

Study	Methodology	FWA type discussed	Sample	Types of organisations sampled	Frequency of FWA use	Impact of various levels of frequency considered	Organisational context	Interdependence between co-workers considered
	observations and documents						managers were home-based	
Broschak and David-Blake (2006)	Quantitative: Survey (n=314)	Part-time	Standard, part-time and temporary workers	Two U.S. locations of a large, multinational financial services organisation	Defined less than 35 hours a week	N	Part-time arrangements were negotiated with managers and organisation reinforced differences between employees with different work arrangements	Y (partly)
Coenen and Kok (2014)	Five case studies: 7 interviews and documents	Telework and flexitime	Managers - people with overview of FWA programme	Telecommunications	Moderate to frequent teleworking, limited to moderate flexitime use	Y	Mixed - in three cases normal way of working, in two cases for certain employees only	Y
Collins (2005)	Case study: interviews, observations, survey (n=199) and 6 focus groups	Telework	Teleworkers and office workers	Insurance	60-90% of the week	N	Department where 12,5% of employees telework	N
Collins, Cartwright and Hislop (2013)	Case study: 21 interviews	Telework	Teleworkers and managers (for context)	Government	Full-time	N	Telework trial, all employees of the group worked from home	N
Collins, Hislop and Cartwright (2016)	Case study: 33 interviews	Telework	Teleworkers, office workers and managers	Public (local authority)	Full-time	Y	Local authority with an established full-time voluntary telework programme	Y
Cooper and Kurland (2002)	Qualitative: 92 interviews	Telework	Teleworkers, office workers and managers	Technology and government	Various (limited information)	Y	Four different organisations with active formal telework programmes that wanted to make telework a viable option	N
Dick (2009)	Qualitative: 75 interviews and three focus groups	Part-time	Part-time workers, standard workers and managers	Three metropolitan police forces in the UK	60-90% of 40-hour workweeks, majority had reduced hours by 20% - resulting in a four-day workweek	N	Requests for part-time work were dealt with on an <i>ad hoc</i> , reactive basis	N
Dick and Hyde (2006)	Conceptual	Part-time	NA	NA	NA	N	NA	N
Dimitrova (2003)	Case study: 90	Telework	Teleworkers and	Telecommunications	Full-time	N	Voluntary telework	N

Study	Methodology	FWA type discussed	Sample	Types of organisations sampled	Frequency of FWA use	Impact of various levels of frequency considered	Organisational context	Interdependence between co-workers considered
	interviews, documents, observations		managers				programme - four different occupation groups with different departmental contexts	
Donnelly (2006)	Case study: 19 interviews	Telework and flexitime	Flexible workers	Consultancy	Flexitime: variability of 2,5 hours around core hours, telework: on an "infrequent" basis	N	Organisation with a long hours culture with informal FWAs that decided to offer formal FWAs (telework and flexitime), participants chosen based on criteria	Y (partly)
Duxbury and Neufeld (1999)	Mixed methods: 68 interviews, 4 focus groups and a longitudinal survey (n=116)	Telework	Teleworkers, office workers and managers	Government	Majority 2 days or less (83%), rest on average 3 days (17%) (part-time telework)	N	Telework trials, people chosen to telework selected based on certain criteria	Y
Felstead, Jewson and Walters (2003)	Qualitative: 202 interviews	Telework	Teleworkers, spouses, trade union officers and managers	Mixed (13 organisations)	40% of the workweek or more	N	Departments within organisations with a history of providing opportunities to work from home	N
Fogarty, Scott and Williams (2011)	Case study: 14 interviews and documents	Telework	Office workers and managers (for context)	Publishing group	Not appropriate (3 days in one group, no information for the other)	N	Organisation that encouraged FWA use with more informal use than formal use since change of CEO	N
Friede <i>et al.</i> (2008)	Qualitative: 52 interviews	Part-time	HR managers	39 large organisations (various industries)	NA	N	No information	N
Gajendran and Harrison (2007)	Meta-analysis (46 studies)	Telework	Teleworkers	NA	Various	Y	Various (not considered)	N
Gajendran and Harrison (2015)	Quantitative: Survey (n=323)	Telework	Teleworkers and managers (rate performance, LMX quality and normativeness)	Mixed	Various	Y	Various (normativeness variable included)	N
Golden (2006)	Quantitative: Survey (n=294)	Telework	Teleworkers	Technology	Average telework 2 days or less (15h) - range from 2-35 hours	Y	FWAs very common	N
Golden (2007)	Quantitative: Survey (n=240)	Telework	Office workers	Technology	Average 15 hours a week (various)	Y	Organisation with an on-going and growing telework programme offered to nearly	N

Study	Methodology	FWA type discussed	Sample	Types of organisations sampled	Frequency of FWA use	Impact of various levels of frequency considered	Organisational context	Interdependence between co-workers considered
							all employees	
Golden and Raghuram (2010)	Quantitative: Survey (longitudinal n=226)	Telework	Teleworkers	Technology	Average telework 48% of the workweek	N	Organisation with an on-going and growing telework programme offered to nearly all employees	Y
Golden, Veiga and Dino (2008)	Quantitative: Survey (n=261, matched sample)	Telework	Teleworkers (managers for performance ratings)	Technology	Managers on average 37% of the workweek, direct reports on average 60% of the workweek	Y	Organisation with an active telework programme	N
Halford (2005)	Case study: Observations, survey and 24 interviews (longitudinal)	Telework and flexitime	Teleworkers and managers	Insurance	Most 7-14 hrs a week	N	Part-time homeworking pilot where FWAs were available to almost everyone on a voluntary basis, yet FWAs had restrictions (core hours and not more than 2-3 days a week at home)	Y (partly)
Hylmö (2006)	Qualitative: 37 interviews	Telework	Teleworkers and office workers	Government	85% of the workweek, office workers would occasionally work from home as well	N	Established formal telework programme, politically mandated in which around 45% of the entire organisation participated, participation was dependent on agreement with supervisor, office-based work was considered the norm	N
Illegems and Verbeke (2004)	Quantitative: 2 surveys (n=83, n=261)	Telework	Teleworkers, office workers and managers	Mixed	Minimum 1 day a week (no additional information)	N	Numerous organisations, some had implemented telework, some expressed interest in doing so, others did not intend to implement it	N
Kurland and Cooper (2002)	Qualitative: Interviews (n=54)	Telework	Teleworkers, office workers and managers	Technology	Various (no additional information)	Y (partly)	Two organisations with active telework programmes and a strong desire and interest to make teleworking work - telework-friendly environments	N
Kurland and Egan (1999)	Quantitative: Survey (n=191)	Telework	Teleworkers	Mixed (11 organisations)	Various (no additional information)	Y (partly)	Organisations were members of a telecommuting trade	N

Study	Methodology	FWA type discussed	Sample	Types of organisations sampled	Frequency of FWA use	Impact of various levels of frequency considered	Organisational context	Interdependence between co-workers considered
							association: 4 telework centres, 3 technology organisations, 1 service organisation, 2 leisure organisations, and 1 government (no more information)	
Lal and Dwivedi (2009)	Qualitative: 25 interviews	Telework	Teleworkers	Telecommunications	Various (2-5 days, most more than 3 days)	N	Established telework programme, around 10% of the employees in the organisation work from home	N
Lautsch, Kossek and Eaton (2009)	Mixed methods: Survey and interviews (n=90, matched supervisor-employee sample)	Telework	Teleworkers, office workers and managers	Information and financial services	No information	N	High proportion of workers in the two organisations teleworked at least on an occasional basis, FWA policies existed but normally FWAs were negotiated with supervisors	Y
Lawrence and Corwin (2003)	Conceptual	Part-time	NA	NA	NA	Y (partly)	NA	Y
Lee, MacDermid and Buck (2000)	Case studies (n=82): 376 interviews and a survey (n=153)	Part-time	Part-time workers, managers, standard workers, subordinates and family members	42 organisations in USA and Canada (various industries)	90% or less (60 and 80% most common - 72% the average)	N	Various - part-time work was negotiated individually with managers	N
Lee <i>et al.</i> (2002)	Case studies (n=82): 376 interviews and a survey (n=153)	Part-time	Part-time workers, managers, standard workers, subordinates and family members	42 organisations in USA and Canada (various industries)	90% or less (60 and 80% most common - 72% the average)	N	Various - part-time work was negotiated individually with managers	N
Lee, Shin and Higa (2007)	Quantitative: Survey (n=58)	Telework	Teleworkers	Various (e.g. consultancy, pharmaceuticals, manufacturing)	Majority 4 days or more (53%)	Y (partly)	Large organisations with a major telework programme, in most cases telework needed approval from managers	N
Lirio <i>et al.</i> (2008)	Case studies (n=83): 168 interviews	Part-time	Part-time workers and managers	43 organisations in USA and Canada (various industries)	32 hours a week on average	N	Various - part-time work was negotiated individually with managers	N
Litrico and Lee (2008)	Case studies (n=8)	Part-time	Part-time workers, spouses, standard workers, managers	Three professional service organisations	50-80% (80% most common)	N	One organisation had formal policies, yet in most cases requests were negotiated	Y (partly)

Study	Methodology	FWA type discussed	Sample	Types of organisations sampled	Frequency of FWA use	Impact of various levels of frequency considered	Organisational context	Interdependence between co-workers considered
			and HR professionals				individually with managers	
Mann and Holdsworth (2003)	Mixed methods: 12 interviews and survey (n=62)	Telework	Teleworkers and office workers	Newspapers	3 days or more (for both groups)	N	Limited information - office workers interviewed did not have a choice to telework	N
Mann, Varey and Button (2000)	Qualitative: 14 interviews	Telework	Teleworkers	Bank and telecommunications	Full-time	N	Organisations had an established telework programme	N
Markey, Kowalczyk and Pomfret (2003)	Quantitative: (n=1219)	Part-time	Part-time workers and standard workers	192 workplaces in Australia (no further information)	35 hours a week or less	N	No information	N
McDonald, Bradley and Brown (2009)	Qualitative: 40 interviews	Part-time	Standard workers (some of which teleworked or worked flexible hours)	One government agency	Various	Y (partly)	Australian, male-dominated, public sector agency, characterised by a full-time work culture and long hours (less than 5% of the organisation was classified as part-time)	N
Morganson <i>et al.</i> (2010)	Quantitative: Survey (n=578)	Telework	Teleworkers and office workers	Technology	No information	N	No information	N
Nentwich and Hoyer (2013)	Qualitative: 21 interviews	Part-time	Part-time workers and standard workers	Science and engineering research institute in Switzerland	Part-time defined as 90% or less	Y (partly)	Equal-opportunity employer attempting to attract women in an otherwise male-dominated field - 28% of employees worked part-time.	Y (partly)
Neufeld and Fang (2005)	Mixed methods: 32 interviews and survey (n=100)	Telework	Teleworkers	No information	Average 32h a week in phase one, 22h in phase two	N	Study one: large multinational with a six-month old telework programme, study two: no information	N
Pérez Pérez <i>et al.</i> (2002)	Conceptual	Telework	NA	NA	NA	Y (partly)	NA	Y (partly)
Perlow (1998)	Case study: 44 interviews, observations, shadowing, performance evaluations	Flexitime	Flexitime users, managers, spouses and office workers	One high-tech organisation	Moderate	N	Product development team in an organisation with a reputation for being considerate for employees' work-life concerns - high level of <i>ad hoc</i> flexibility in the team, no management approval needed	Y

Study	Methodology	FWA type discussed	Sample	Types of organisations sampled	Frequency of FWA use	Impact of various levels of frequency considered	Organisational context	Interdependence between co-workers considered
Pyöriä (2003)	Mixed methods: 21 interviews, observations, survey (n=1775)	Telework	Teleworkers and office workers	Quantitative part: no information. Qualitative part: Five knowledge intensive organisations - limited information	No information	N	No information	N
Raghuram (1996)	Conceptual	Telework	NA	NA	NA	N	NA	Y
Raghuram and Wiesenfeld (2004)	Quantitative: Survey (n=756)	Telework	Teleworkers	Telecommunications	Average 3.27 days per week	Y	Large organisation with a voluntary virtual work programme	N
Raghuram <i>et al.</i> (2001)	Quantitative: Survey (n=756)	Telework	Teleworkers	Telecommunications	No information	N	Large organisation with a voluntary virtual work programme	Y
Richardson and McKenna (2014)	Qualitative: 80 interviews and documents	Telework	Teleworkers and managers	Technology	2 or more days a week	Y (partly)	Large multi-national that encouraged FWA use and had a growing number of employees that teleworked	Y (partly)
Sewell and Taskin (2015)	Case study: 37 interviews (at 3 time points - longitudinal design)	Telework	Teleworkers and managers	Pharmaceutical	1-2 days per week	N	Two departments where a pilot telework project was launched: one (IT back office) because of space restrictions and the other, R&D department, because the work fitted well for teleworking (several criteria established for potential participants)	Y
Taskin and Bridoux (2010)	Conceptual	Telework	NA	NA	NA	Y	NA	N
Taskin and Edwards (2007)	Case studies: 36 interviews	Telework	Teleworkers, office workers and managers	Government	Various (limited information)	N	Two organisations: one is very formal and bureaucratic where telework was granted <i>ad hoc</i> to most deserving employees, the other developed a telework programme to improve working conditions	Y (partly)
Teasdale (2013)	Case studies: 47 interviews	Telework and flexitime	Teleworkers and office workers	Hospital, newspaper and educational institution	No information	N	All organisations had flexible working policies that were internally promoted	Y (partly)
ten Brummelhuis,	Quantitative: Survey	Telework and	Flexible workers	Mixed (30 different	No information	N	No information	N

Study	Methodology	FWA type discussed	Sample	Types of organisations sampled	Frequency of FWA use	Impact of various levels of frequency considered	Organisational context	Interdependence between co-workers considered
Haar and van der Lippe (2010)	and time diaries (n=1017)	flexitime	and office workers	organisations)				
Thatcher and Zhu (2006)	Conceptual	Telework	NA	NA	NA	Y	NA	N
Tietze and Nadin (2011)	Case study: 21 interviews (longitudinal, 7 participants at three time points)	Telework	Teleworkers	Government	Full-time	N	A local authority where a pilot telework programme was implemented	N
Van Dyne, Kossek and Lobel (2007)	Conceptual	Telework	NA	NA	NA	N	NA	Y
Vayre and Pignault (2014)	Qualitative: 24 interviews	Telework	Teleworkers	No information	2 or more days a week	N	No information	N
Watson Fritz, Narasimhan and Rhee (1998)	Quantitative: Survey (n=230)	Telework	Teleworkers and office workers	Mixed	Majority 2 days or less (86%)	N	Large organisations with an established telework programme	Y (partly)
Watson-Manheim, Piramuthu and Narasimhan (2000)	Quantitative: Survey (n=228)	Telework	Teleworkers and office workers	Mixed (three high-tech service and sales, three utility organisations and two government agencies)	81% 2 days or less	N	Organisations with existing telework programmes, employees were given the opportunity to telework	Y
Wilton, Páez and Scott (2011)	Qualitative: 32 interviews	Telework	Teleworkers and office workers	Public (educational institution)	Various	N	Educational institution with no formal telework programme - telework was negotiated informally within departments	N
Windeler, Chudoba and Sundrup (2017)	Quantitative	Telework	Teleworkers and office workers	Various	Part-time telework: one or two days per week	Y	Study one: financial services organisation implementing part-time telework, study two: various	Y

Appendix B Exploratory study interview framework

1. Can you tell me about what your work as a consultant involves?
2. Based on your experience as a consultant, what do you think are the key challenges when members of a team have flexible work arrangements??
 - a. What do you think is the main reason for this (e.g. reduced facetime or other reasons)?
 - b. Do you know if managers and actual team members share similar views about this? If yes, please explain.
 - c. Is this more prevalent in some types of teams than others (e.g. more collaborative teams)? If yes, please explain.
 - d. Do you perceive differences in the impact of FWAs depending on in what stage of a task the team is? (e.g. planning, execution, delivery etc.) If yes, please explain.
3. Based on your experience as a consultant, do organisations deal with these issues/challenges?
 - a. What strategies do they using to address them?
 - b. Do teams themselves do anything to accommodate different working arrangements?
4. Based on your experience as a consultant, have you witnessed whether these strategies are working?
5. Outside of your work in organisations, what is your personal experience regarding flexible work in teams?

Appendix C Main study interview framework

Overarching theme: *General & FWA use*

1. What is your role in the team?
2. Tell me a little bit about what it is you do.
3. In what way can you control your work times? To what extent do you use it? What are the benefits of this?
4. What about your work location, e.g. whether you work from home? How often do you work from home? What are the benefits of this?
5. Do other members of your team have the same level of flexibility?
 - a. If no, do you know why not?
 - b. Would you say there is an expectation within the team of when you need to be present at the office versus when you can work from home? Why?
 - c. In general, how would you say being able to control you work times and work from home is perceived in your team?
 - d. How does this level of flexibility impact how the team works?
 - e. How is it perceived in the organisation?

Overarching theme: *Team operation*

1. Think back to the last big delivery your team had to work on.
 - a. Walk me through the collaboration process from the start to finish. How did the team work together to get the delivery done? (task coordination, collaboration between individuals)
 - b. Reflect on individual contributions and roles in the project. How dependent were team members on each other? How were contributions integrated?
 - c. Were there challenges that arose? How did you overcome them?
 - d. What was most rewarding?
 - e. How typical was this delivery for the team?
2. I am interested to know what role leadership played in this process. Who usually takes the leadership position in the team? Who usually takes the scrum master position in the team?

- a. How does he/she help the team to get the work done? Can you give me examples?
- b. Would you say they have a role in determining your work flexibility (e.g. working from home, working at different hours, being present during office hours at the office etc.)? If no, who does?

Overarching theme: Methods of communication & facetime

1. During this delivery, what were the main methods of communication with other team members? How could you get hold of other team members?
 - a. Is this typical for the team during deliveries?
2. During this delivery, how much time per week did the team spend all together face-to-face at the office? Is this typical for the team during deliveries?
 - a. What was the benefit of meetings?
 - b. What was the benefit of the time that you were all present together at the office?
 - c. What was the benefit from other communication methods you used (e.g. Skype, messenger, telephone, teleconference etc.)?
3. In general, how important is it that the team works face-to-face? Why?
4. Would you say there are benefits to not working face-to-face? If yes, how do other communication methods compensate for the lack of facetime?

Overarching theme: Organisational & team culture

1. If you could describe the atmosphere within your team in three words, what would you say?
 - a. Why do you choose these words? Can you give me an example?
2. What words would you chose to describe the atmosphere in the organisation? Why?

Overarching theme: Summing up

1. Overall, how is this team compared to other teams you have worked on?
 - a. What do you enjoy the most being part of this team?
 - b. What are the main areas in need of improvement in the team?
 - c. In your opinion, how does this level of flexibility impact how the team works?
2. What's the best part about working in this environment that I won't be able to see from just a walk around the office?
3. Age, education, family situation, how long have you worked for the company?

Appendix D Case studies – key characteristics

Table D-1 Appendix D Case studies – key characteristics

Organisation	Polaris		Libra		Orion		
Team	Navi	Castor	Electra	Propus	Gemma	Sirius	Media
<i>Team size</i>	Six	Seven	Six	Nine	Six	Five	Eight
<i>Reduced hours contract (part-time work)</i>	One, 36-hour contract	Two, 36-hour and 32-hour contracts	Three, two 32-hour contracts and one 36-hour contract.	Four, two on 36-hour contracts, one 32-hour contract and one 38-hour contract	Three, 32-hour contracts	Three, three 32-hour contracts	Three, two with 32 hour contracts one with a 36-hour contract
<i>Flexitime use</i>	Occasional	Occasional	Occasional	Occasional	Occasional	Occasional	Occasional
<i>Telework use</i>	Three regularly (1-2 days per week), three occasionally	Three regularly (1-2 days per week), one occasionally, others no	Two occasionally. Others no.	One regularly (every afternoon). Others no.	Three occasionally. Others no.	One regularly (2 days per week), one occasionally, others no.	Three occasionally. Others no.
<i>Set up of team meetings</i>	Weekly planning meeting on Monday afternoons.	Daily status meetings. Weekly planning and retrospective on Monday mornings. Thursday grooming meeting as well.	Daily status meetings.	Daily status meetings. Planning and retrospective meeting every second Monday morning.	Daily status meetings. Planning and retrospective meetings only when team works in sprints (depends on tasks).	Weekly planning meeting with the client on Monday mornings.	Daily status meetings. Weekly high and low meeting (retrospective) every Monday.
<i>Team roles</i>	A team lead/product owner. Three developers. Two testers.	Five developers. Two testers (one of which acts as scrum master as well)	A team lead/product owner (also acts as a tester). Four developers. One tester.	Product owner (acts as a tester as well), eight developers (one serves as scrum master as well). One tester.	Four developers, two architects (technical leads and scrum masters for different aspects of the software).	Four developers, an architect (technical lead). Project manager acts as scrum master (officially not a part of the team)	Five developers, two architects, a project manager that acts as a product owner and scrum master
<i>Team member tenure</i>	Four more than 10 years, one 7 years, one 2 years	One more than 5 years, two around 2 years, four less than 1 year	Four more than 5 years, two less than 1 year	Five more than 5 years, one around 2 years, three less than 1 year.	Five more than 5 years, one more than 10 years	Two more than 5 years, one around 2 years, two less than 1 year	Two more than 5 years, two around 2 years, three around 1 year, one less

Organisation	Polaris		Libra		Orion		
Team	Navi	Castor	Electra	Propus	Gemma	Sirius	Media
<i>Temporal stability</i>	More than five years	In current format around six months	More than five years	In current format around three months	Around two years	Around three months	than 3 months In current format around one year
<i>Leadership</i>	Team lead leads the team. Developers have a lot of technical expertise.	Currently without a team lead. Scrum master manages tasks.	Team lead leads the team. Developers have a lot of technical expertise.	Product owner and scrum master act together as leaders to the team.	Two software architects (CTO is also involved)	The software architect, although he has little time for the team. A lead developer has the most knowledge of the code.	The software architects are technical leads, the project manager is a scrum master /team lead.
<i>Main tasks of the team</i>	Maintenance or development of new features of an old and established product with a large client base.	Maintenance or development of new features of a 2-year old product with complicated code with legacy.	Maintenance or development of new features of an old and established product with a large client base	Development of a new feature for the company's products. Also maintenance of a 2-month old product.	Maintenance or development of new features of a complicated product, client determines what they want done.	Maintenance of an old product that has complicated and undocumented code.	Maintenance of several websites or development of new websites that are all similar in nature.
<i>Tools used for electronic communication (in order of importance)</i>	Emails, messenger	Messenger, emails	Emails, messenger	Emails, messenger	Emails	Emails, skype	Emails
<i>Additional remarks</i>			Two members of Electra had been working on a project in Propus for the previous 3 months. They are counted as Propus members as they perceived themselves as Propus members at the time of the study.	Two members of Electra had been working on a project in Propus for the previous 3 months. They are counted as Propus members as they perceived themselves as Propus members at the time of the study.	The same software architect is counted as a member of both Gemma and Sirius. He spends most of his time in Gemma but has an important responsibility in Sirius as well.	The same software architect is counted as a member of both Gemma and Sirius. He spends most of his time in Gemma but has an important responsibility in Sirius as well.	

Appendix E Final analytical coding structure

Table E-1 Appendix E Final analytical coding structure and strength of evidence

Theme	Sources – number of respondents (total of respondents = 51)	References
Main theme: Perceived value of facetime		
Active facetime (interacting face-to-face)	45	94
Passive facetime (having the opportunity to interact face-to-face)	40	83
Accessibility and disturbances	27	44
Physical proximity	25	47
Social control	16	22
Main theme: Impact of reduced facetime		
Limitations of electronic methods	26	42
Miscommunications	15	19
Delays in response times	30	60
Freewheeling	11	19
Main theme: Contextual features		
Team composition		
Skill differentiation	23	43
Task characteristics		
Task complexity	34	65
Goal clarity	21	28
Temporal characteristics		
Temporal stability	15	28
Task urgency	26	39
Structural characteristics		
Face-to-face meetings	40	66
Frequency of absence	27	41
Predictability of absence	29	43
Synchronisation of presence	13	16
Proactive behaviours		
Proactive availability	31	58
Proactive responsibility		
Timing of absence	12	22
Informing the team of absence	27	36
Informing the team of work	19	27
Environmental characteristics		
Culture of accessibility and helping	37	66
Acceptance of FWAs	7	8
Descriptive on FWA policies in each organisation	42	92
Descriptive on organisational culture in each organisation	35	128